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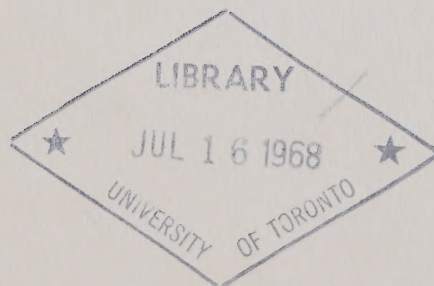
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**REPORT**  
**of**  
**COMMITTEE ON MANPOWER PROBLEMS**  
**IN THE UNLOADING OF GRAIN VESSELS,**  
**PORT OF MONTREAL**

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March 6th, 1968.

The Honourable Jean Marchand  
Minister of Manpower and Immigration  
E.A. Bourque Memorial Building  
305 Rideau Street  
OTTAWA, Ontario

Dear Mr. Minister:

It gives me pleasure to forward to you, on behalf of the members of the Committee, two copies in English and in French of the Report of the Committee on Manpower Problems in the Unloading of Grain Vessels, Port of Montreal, which is dated March 6, 1968.

A copy of this Report has also been sent to the National Harbours Board and to the National Syndicate of Montreal Harbour Employees (CNTU).

I hope that the recommendations contained in this Report will aid in the settlement of the dispute which formed the basis of this study.

Yours sincerely,

(signed)

Maxwell Cohen  
Chairman









R E P O R T

of

COMMITTEE ON MANPOWER PROBLEMS IN THE UNLOADING  
OF GRAIN VESSELS, PORT OF MONTREAL





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## CHAPTER I

### INTRODUCTION - TERMS OF REFERENCE

On the 29th day of July, 1966, the National Harbours Board, the National Syndicate of Montreal Harbour Employees (CNTU), and the Minister of Citizenship and Immigration (now the Minister of Manpower and Immigration) agreed to establish a Committee on Manpower Problems in the Unloading of Grain Vessels in the Port of Montreal. The purpose of this Agreement was

To survey and assess the effects on manpower resulting from the recent technological changes that the National Harbours Board has implemented and those that are forecast for the future, in the unloading of grain vessels in the Port of Montreal.

To establish what measures can be taken to minimize as far as possible, if not altogether avoid the inconveniences which may affect the labour force as a result of these changes.

The Committee was given the power:-

- a) to adopt rules for the conduct of its meetings and for the general conduct of its activities;
- b) to determine the areas and direction of studies to be carried out and in particular to study the causes which may affect directly or indirectly the workers of the grain elevators;
- c) to conduct the approved studies required by utilizing the most up-to-date and efficient techniques, particularly in work-study or other subjects;

## Chapter I

- d) to review the reports of such studies carried out and to formulate recommendations based on the findings of such research;
- e) to submit reports and recommendations to the parties and forward confidential copies to the Federal Minister through the Manpower Consultative Service.

There is also the bearing on the terms of reference of this Committee, directly and indirectly, of the Collective Agreement signed on August 10th, 1965, which expired on December 31st, 1966. Article 27 has special relevance for this Committee and provides (translation)

### ARTICLE 27 - TECHNICAL CHANGES AND OTHERS

- 27.01 In the event of technical or technological improvements or of any modification in the structure or in the administrative structure of the Board or in the methods of work or in the event of abolition of functions, the Board must, in concert with the Syndicate do everything so as to allow an employee affected to adapt himself to said improvements, modifications and changes and to that end shall give the employee a trial period of one month.
- 27.02 In the event of technical or technological improvements or of any modifications in the structure or in the administrative system of the Board or in the methods of work or in the event that the Board decides to abolish certain functions, the Board shall afford to the employees involved the possibility to be affected to equivalent positions without loss of salary and insofar as such modifications will not involve more than 50% of the unit concerned.

Should an employee be transferred because of the application of the present article, he shall retain his seniority of sequence and of section in his new sequence and section. In the event that the Board shall consider impossible to place an employee in any equivalent position, an employee shall then have the right to displace any other employee with less seniority than he, first in his



sequence and then in his section provided this employee is capable of meeting the normal exigencies of his new position.

27.03 In the present article the word "Unit" means one or the other of the sections as defined in the certificates of accreditation:

1. General maintenance section;
2. Cold storage warehouse section;
3. Grain elevator section.

27.04 In the event that the modifications referred to in the foregoing paragraph shall involve more than 50% of any of the units defined at paragraph 27.03, the employees affected shall be granted upon their leaving Board's employ severance indemnity on the following scale: two (2) weeks of salary per year of service with the Board up to a maximum of thirty-six (36) weeks; in such cases the Syndicate and the employees involved shall be notified at least one hundred and twenty (120) days in advance.

The Committee is also aware that the parties have entered into an understanding about the effective consequences of certain findings of the present Committee. It is clear from these terms of reference that it was the intention of all the signatories to the Agreement establishing this Committee that a serious objective effort be made to inquire into the character of the changes under trial in the methods for unloading grain vessels at their Montreal elevators by the National Harbours Board; the extent to which the new method could be described as both safe and efficient; the extent to which such new method would lead to redundant manpower and the exact numbers involved; and finally the equitable alternatives available to the parties to deal with these surplus members of the labour force.

Indeed it was evident from the Agreement to set up this Committee, and from the relationship of this Agreement to the general Collective Agreement - particularly Article 27 as set forth above - that the parties regarded themselves as obliged to accept the idea of technological change leading to improved methods for discharging grain, at the same time as the parties recognized their obligations to deal fairly with the members of the labour force

## Chapter I

now displaced by these new methods. It is worth stating at this point that the obligation to treat the work force fairly in consequence of technological improvements was not only one of the terms of reference of the agreement among the three parties concerned, but equally seemed implicit as a principle in the Collective Agreement itself, in Article 27.

Finally, apart from the technical obligations that the parties have assumed in setting up this Committee and proceeding in good faith to achieve its objectives, there is the broader context in which this Committee has carried on its investigations and within which it now makes its report - namely, the general industrial setting where technological change imposes on management, labour and the general community the responsibility for the distribution of the benefits of such change where there may be increases in productivity on the one hand and the need to cushion the burdens of these changes on given individuals - of course within some reasonable limits based upon the capacity of the industry or firm to bear such cushioning costs together with the supplementary assistance of general government policy in dealing with problems of displaced or redundant labour.

## CHAPTER II

### BACK-GROUND - THE NATURE OF THE DISPUTE

This inquiry is the result of a dispute arising between The National Syndicate of Montreal Harbour Employees (CNTU) and the National Harbours Board that became the subject matter of the tripartite agreement (Appendix X) and also of a specific grievance on July 18th, 1966. The grievance was filed after several meetings between the parties at which the proposed technological changes were discussed and no agreement reached and reads: (translation)

Violation of Articles 23.09 and 27.01. The unloading of grain vessels, which is effected according to the new methods of work, violates the above mentioned articles in the respect that the number of men per crew and per marine leg have been diminished and there has been a refusal to do everything possible, specifically as suggested by the Union on the 17th of July 1966, in order to permit the employee affected to adapt himself to the said improvements. We request the formation of an Arbitration Board as provided in Article 23.09.

This grievance, of course, was subject to the grievance procedure of a Collective Agreement. For reasons which are not material to these findings, the grievance was not processed fully in the manner prescribed by the Collective Agreement and, for a time, the allegation of this grievance threatened to become the basis of a work stoppage. Considering the grave character of both the unresolved grievance on the one hand and a stoppage at the height of the grain shipping season on the other, it was desirable to resolve this dispute and to forestall any action leading to the interruption of the unloading of grain at the National Harbours Board elevators.

## Chapter II

At this point, the Manpower Consultative Service of the Department of Citizenship and Immigration, as it was then known (now the Department of Manpower and Immigration) offered its facilities to the parties under a new program sponsored by the Department and designed to encourage the parties, in association with the Department, to study those situations involving technological change with possible redundant labour effects. The Department has taken the initiative in cooperation with Unions and Management in certain cases already reported,\* to establish such study or research committees on the basis of a tripartite agreement among the two parties in dispute and the Government with the Committee so created financed by all three participants, but with the Federal Government bearing half the cost. The interest of the Federal Government clearly is not only the avoidance of grievances and work stoppages in individual cases but also the larger objective of developing patterns of practical equity in dealing with necessary technological changes which while achieving productivity gains at the same time would seek to avoid burdening the individual worker with the cost of such changes in terms of loss of employment and income, work patterns and personal status. It was believed that these burdens could be alleviated wholly or in part by varieties of methods already developed in other countries and to an increasing extent in Canada itself.

The association, therefore, of the Department of Manpower and Immigration with the present Committee should be seen as part of a wide concern for the whole issue of technological change and manpower policy. To that extent, the present analysis and recommendations should be viewed not only within the context of the particular dispute and grievance but also within the larger framework of a developing national policy towards technological change with their productivity gains and the fair treatment of the displaced manpower that often results from such changes.

It is at this point desirable not only to have in mind the facts of the dispute and grievance set out above

\* See Chapter IV below



but the background of this particular industry and the traditional working relations of the parties within the industry. The shipping of grain on the St. Lawrence River and the Great Lakes is one of the oldest sources of bulk cargo on the Great Lakes - St. Lawrence system and dates from the first part of the nineteenth century. With the development of the St. Lawrence canal system, small ocean-going vessels were able to traverse the locks and travel to the great inland ports on Lake Superior and Lake Michigan. But, for the most part, the shipment of grain required very large equipment for trans-shipment from lakers to ocean-going vessels. This trans-shipment took place, naturally, at the major terminals where ocean-going vessels would terminate their voyage, and before the modern St. Lawrence seaway system permitted increasingly larger vessels to go all the way up the Great Lakes, the Cities of Montreal and Quebec, and, to a lesser extent, Three-Rivers and Sorel, were the main trans-shipment centers. Such trans-shipment requires unloading of grain from lakers into elevators to be reloaded again onto ocean-going vessels. There were a number of important technological problems here: There was first the speed of the unloading to minimize the time of a vessel remaining in port; second, the rapidity with which the elevator could receive the grain and the technology of improved elevator reception devices, particularly the development of the marine leg - a conveyor belt mechanism dipping into the hold where bulk grain was stored; and, third, the coordination of different labour forces, namely long-shoremen, grain unloaders and elevator workers almost always with different union affiliations, seniority rights, wage scales, etc.

Despite the rise in the number of ocean-going vessels able to traverse the Seaway, by far the larger volume of grain exported through Eastern-Canadian ports is still the result of trans-shipment at Montreal, Quebec, Three Rivers and Sorel - although elevators have been built or are in the planning stages at other centers as well. This system of loading and unloading grain vessels is likely to be a continuing feature of the industry for many years to come, and the St. Lawrence Seaway System has not appreciably altered this pattern. To that extent, therefore, continuing improvements in the technology of grain trans-shipment are a natural expression of the industry's search for efficiency and

## Chapter II

lower cost. In the present case, the unloading of grain, until the recent technological changes giving rise to the dispute which has led to this inquiry, took the form of "power-shovel-assisted unloading" and "pneumatics-assisted unloading".

It should be observed that the methods traditionally used by the National Harbours Board in the Port of Montreal for unloading of grain were, in some of the North American ports, already replaced by the "front-end-loader" system now introduced in Montreal and which has given rise to the present inquiry. To that extent, the technological changes now under investigation by this Committee, present no issues of undue technical novelty, since there has been some years of experience with similar unloading devices in certain North American ports. In short, we are dealing here with the introduction of labour-saving devices in the unloading of grain vessels which already have been installed elsewhere in North America and about which there is a good deal of general and technical knowledge.

At this point it may be useful to describe the identities of the parties, both the National Harbours Board and the Syndicate, their structures and their particular relations.

The National Harbours Board is a Crown Corporation created by an Act of Parliament (RSC. 1952, C. 187). Its primary function is to operate as an autonomous agency of the Crown the harbour facilities in the main ocean-going ports of Canada. As with other agencies of the Crown engaged in commercial or non-commercial activities, it enjoys a large measure of administrative independence. That independence is expressed, among other things, through its possession of legal personality for the purposes of entering into commercial transactions of a variety of types as well as entering into agreements with its labour force. In the Port of Montreal there are 1429 employees of the National Harbours Board and of these, 1213 have been organized into labour unions for varying numbers of years. At the present moment, there are the following unions embracing the organized employees of the National Harbours Board and with which the Board has entered into Collective Agreements:

- National Syndicate of Montreal Harbour Employees (CNTU);
- \* National Syndicate of Montreal Harbour Office Employees (CNTU);
- \* National Harbours Board Police Brotherhood;
- \* Seafarers International Union of Canada;
- \* Brotherhood of Railroad Trainmen;
- \* Brotherhood of Locomotive Engineers; )
- \* Brotherhood of Locomotive Helpers ) Joint  
and Hostlers; ) Agreement

The unloading of grain vessels is the responsibility of employees who are part of a bargaining unit for which the National Syndicate of Montreal Harbour Employees (CNTU) has been certified. The particular bargaining unit with which we are concerned contains 360 members (with a Rand formula provision so as to subject all employees to the payment of union dues whether members or not) and the bargaining agent actually claims as members 100 per cent of the unit.

The bargaining agent is a Syndicate forming part of the Confederation of National Trade Unions. The Collective Agreement in force at the time the present dispute arose was signed on August 10th, 1965, and covered all of the employees in the grain elevators section, the cold storage warehouses and the general maintenance forces of the National Harbours Board. The number of employees in each bargaining unit covered by the Agreement on the date of its coming into force on August 10th, 1965, was as follows:

Grain Elevators Section	399
General Maintenance Forces	516
Cold Storage Warehouses	40.

\* Not involved in this case.

## Chapter II

On August 30th, 1967, the number of employees in the same bargaining units was as follows:

Grain Elevators Section	360
General Maintenance Forces	467
Cold Storage Warehouses	40.

For purposes of this inquiry, the important fact is the existence of the bargaining unit dealing with grain unloaders and the effect on their numbers of the technical changes which will be discussed in detail in a later section of this Report. It is also worth bearing in mind Article 27 of the Collective Agreement, as set forth above, since these provisions clearly anticipated technical changes in working and unloading methods and this inquiry and report will refer from time to time to these provisions.

It is now necessary to examine briefly the central nature of the grievance whose formal statement was set out above and which grievance has given rise to the present inquiry. It is the opinion of this Committee that what is involved here is not the determination as to whether or not the parties were obliged to consider the effect of technological changes on the labour force - for according to Article 27, clearly they were so obliged - but rather what were the most desirable ways of:

- a) determining the effects of the changes on the safety of work methods and on the size of the labour force required upon the introduction of these changes;
- b) providing some equitable answers to the situation of those members of the work force displaced by acceptable changes.

Now, while these questions might have been answered by the parties bilaterally in their dealings under Article 27, the fact is that the Collective Agreement did not anticipate all the difficulties that technological changes might pose for the parties and more particularly did not provide, apart from an arbitral tribunal to deal with grievances, for some objective mechanism of inquiry into all the aspects, technological, social, etc. Furthermore, it is not unfair to say that such detailed inquiries can



be costly, and indeed the offer of the Federal Government to bear a rather large share of the cost must necessarily seem attractive to the parties, particularly when such cooperation by the Federal Government in the field of manpower studies tends increasingly to be undertaken within a framework of ever-greater knowledge on the part of the Manpower Department and with that improved knowledge at the disposal of the parties and any investigating agency.





### CHAPTER III

#### METHODS AND PROCEDURES FOLLOWED BY THE COMMITTEE

The Committee convened on the 20th of September, 1966, to determine its working methods. It had the valuable assistance from that time onward of Mr. Angelo Forte, of the Manpower Consultative Service, who participated as a very helpful observer on behalf of the Department. The Committee decided that it would need to give the Chairman a Secretary who preferably was familiar with labour law and labour economics, and Mr. Stanley H. Hartt, M.A., B.C.L., of the Montreal Bar was appointed on October 14th, 1966, as Secretary of the Committee and Executive Assistant to the Chairman.

The composition of the Committee had been determined before the appointment of the Chairman and comprised Messrs. Jean-Paul Hétu and Roger Comtois, who had been nominated by the Syndicate, and Messrs. Marius Bergeron, Q.C., and A.R. Drolet, Eng., by the National Harbours Board. From the outset, the Committee made every effort to operate as a unit, without partisanship by any of the members, whatever the source of their nomination may have been.

It was also determined that the Committee would operate in private and would hold no public hearings. It is the Committee's view that it is a Committee of Inquiry established pursuant to the Agreement among the three signatories referred to above; but that whatever its mandate may be under the agreement, it also had to bear in mind the provisions of the then-existing Collective Agreement between the Syndicate and the National Harbours Board. Nevertheless, the Committee's mandate gave it full freedom to make any recommendations that it deemed desirable following its study.

After a number of preliminary discussions within the Committee, the following procedural and research needs became clear:

### Chapter III

- a) it was necessary to undertake a special time and motion study to be made by expert personnel to determine the actual effects on manpower of the changes under trial in the unloading of grain vessels;
- b) any such study would have to keep in mind the need to determine the effects of the changes on "efficiency" and the extent to which such changes were consistent with "safety";
- c) it was also necessary to study the older procedures in order to compare "efficiency" and "safety" characteristics;
- d) it was necessary for the Committee itself to observe the operation in order to have some appreciation both of the old and the new methods;
- e) once the Committee had before it a report dealing with the old and new methods, it would then be in a position to draw certain conclusions about the actual effect on the manpower requirements of the National Harbours Board for its future operations in unloading grain vessels;
- f) other special studies of an economic or technical nature possibly would need to be undertaken as the inquiry proceeded.

With these objectives in mind, the Committee early in its deliberations agreed to the appointment of the firm of Dufresne, McLagan, Daignault, Inc., to study the various grain unloading methods referred to, both old and new. In order to assure some accuracy in the analysis to be made by these experts, the National Harbours Board was asked to make no further technological changes in the new methods until the study was completed. In order also to make certain that the parties felt secure in the methods pursued by the experts, both the Syndicate and the National Harbours Board were permitted to have observers present when the experts employed by the

Committee were conducting their studies. The effect of this procedure was to forestall any dispute over the validity of the procedures and findings of the Consulting Engineer engaged in the study.

The experts reported to the Committee on December 13th, 1966, and the report is attached hereto as Appendix I, to which is attached a technical description prepared by the National Harbours Board of grain unloading procedures both old and new and entitled "Grain Unloading Methods in Montreal Harbour".

Upon receipt of the report, the Committee met to consider the uses to which the report would be put and it was decided that it was desirable to submit the report to the Syndicate and the National Harbours Board for their official views, although their engineering representatives had been present when the study was being taken, as indicated above.

The Committee, in due course, was informed by both the National Harbours Board and the Syndicate that they had no material or technical objections to the report, its methods or its findings, although the Dufresne report did not investigate all unloading methods.

The Committee then considered the report on its merits. The report implied that the manpower plans of the National Harbours Board were consistent with efficiency and safety.

At this stage it was quite evident that the Committee would have to develop some principles to guide its final recommendations with respect to the treatment of the members of the work force who might be rendered "surplus" as a result of these changes in grain unloading methods. Indeed, that was the principal reason for the appointment of the Committee. But no well-defined guidelines for this task existed, except those arising out of the limited experiences of similar inquiries undertaken within recent years in the United States and Canada, the policy statements of government and officials, notably those of the Economic Council of Canada, and of course the general discussions of technological change and manpower displacement taking place in administrative and academic circles. (See Chapter IV below).



### Chapter III

In due course, after much discussion, the Committee decided that it would invite the parties to make representations as to the future of these displaced employees, bearing in mind their skills and seniority in order to fit them into alternative employment which the National Harbours Board was in principle prepared to offer. Indeed, the National Harbours Board, together with the Syndicate and in accordance with the Collective Agreement, had selected from among the displaced grain unloaders, and had trained, during working hours, the personnel needed for the operation of the payloaders to be used under the new method.

As will be evident below in Chapter V, the Committee frequently was torn between trying to satisfy the potential individual claims of employees under Article 27 - whatever its legal effect - and trying to achieve some general formula governing all the employees affected that would be fair to all as a class as well as to the National Harbours Board itself.

In order to assist the Committee to understand the position of all of the individual workers affected, guidelines were prepared for the Syndicate and the National Harbours Board to help them with the task of examining the names of each displaced worker. These guidelines invited the parties to study each name and examine the skill and income position of each man, to inquire into his "unit" and "plant" seniority and then to agree on what theoretically such individual redundant employee would, in the view of both parties, be entitled to by way of available alternative employment. Wherever the parties would be unable to agree either in the matter of interpreting the guidelines or on individual names, these disagreements were to be returned to the Committee for further analysis and recommendations.

It is worth observing that the guidelines were constructed on the basis of:

- a) certain obligations assumed to exist under the Collective Agreement with particular reference to Article 27 but without finally determining the legal meaning of the said Article;



- b) the obligations of the parties as determined by the agreement creating the Committee where the parties promised every cooperation in facilitating the Committee's research;
- c) the offer by the National Harbours Board in its letter of February 1st, 1967 (see Appendix VII) to absorb into alternative employment all the members of the work force made surplus by the technological changes in the unloading of grain vessels. It is important to note that this offer amounted to a waiver by the National Harbours Board of its right to lay off redundant employees among the grain unloaders and an undertaking to rely on attrition of the work force (by retirement, departure, death, etc.) to reduce the number of redundancies. In order to accelerate this process, the Board refrained from hiring new employees after deciding on the introduction of the new unloading methods, thus creating some openings for the displaced workers.

After many months of prolonged discussion in the Committee, it was concluded generally that if possible the Committee should try to develop a formula that would avoid having to give a technical ruling as to the rights of each employee affected by the technological changes and that instead the Committee would try to fashion a formula that would give such employees irrespective of skills or seniority equitable treatment that would also be practical to administer by the National Harbours Board. It was hoped that such a formula would, however, not deny the probable existence of other kinds of rights under the Collective Agreement, but rather would suggest the advantage to all the workers affected of a report that dealt fairly with them as a group. The delay in completing this inquiry and report is the measure of the Committee's difficulty in reconciling and harmonizing these two possibly conflicting approaches to the achievement of an acceptable formula.



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## CHAPTER IV

### TECHNOLOGICAL CHANGE AND MANPOWER POLICY THEORY AND PRACTICE

Technological change is and must be a basic factor in the life of any developing industrial society. Economic growth can only occur when innovation makes it possible to employ a smaller proportion of the labour force in producing the goods and services which the economy has turned out in preceding periods and to re-allocate the resulting surplus labour supply thus created to new endeavours. In the overall context of the economy as a whole, this process, which has been going on throughout the history of man, and at a more rapid pace since the industrial revolution, can cause no quarrel, since it is the very vehicle by which the standards of living of the individuals composing the society are improved. And yet, it is equally clear that this process, however beneficial to society when viewed in general terms, can generate suffering and economic deprivation to some or all of the individuals holding down the jobs which have been eliminated as the result of a particular technological change. For the broad, general economic analysis does not concern itself with individuals, but rather lumps them together in such concepts as "labour force" or "labour supply". To be realistic, it is necessary to acknowledge that the particular worker whose labour power is "liberated" by a specific innovation may not, due to lack of special skills, be the worker who finds employment in the new occupations made possible by the change. In fact, these adjustments may take place over an entire generation

(1)

This Chapter is based on the study undertaken by Mr. A. Ryba for the Committee and added to this Report as Appendix V.

## Chapter IV

and the individual who finds employment in a new, growth industry may be one just starting his career with the required training and specialization, while the career of a displaced worker may be brought to a premature and abrupt end. Global and statistical concepts always tend to mask the more specific realities, and burdens, in terms of the individual.

Because of this conflict between the necessity for, and the desirability of, technological change on the one hand, and the potential suffering in terms of lost employment, lost status, and lost human dignity on the other, there has always been a vocal group within the labour movement protesting against innovation when it resulted in a reduction of the work force. Yet, as indicated above, a re-allocation of the work force is the very purpose of, and advantage sought by, technological change, both from the point of view of the enterprise and of society as a whole. From the time of the smashing of the spinning jennies by groups of outraged workmen during the industrial revolution to the present day, there has been a feeling, certainly not limited to organized labour, that, while acknowledging the social benefits to be derived in the long run from technological change, it ought to be tempered by a consideration in the short run for the position of the employee. For when his service with, and usefulness to, an employer is terminated, he is rendered unemployed, and often, perhaps, unemployable because of the elimination of his trade. As the result of the development of this kind of thinking, much has been written in academic circles about the problem of the human effects of economic progress and a reasonable beginning has been made by industry both through specific provisions introduced into collective agreements to deal with this kind of situation and through joint management-labour studies of the problem with a view to creating workable institutions for dealing with this vital social challenge. Governments are playing an increasing role in developing programs within their own fields of responsibility and in encouraging labour and management to do their part within the scope of their particular relationships.

Realizing the growing literature on this subject the Committee commissioned Mr. André Ryba to prepare the study which is annexed to this Report as Appendix V.



That study demonstrates there is rapidly developing a concept as to the proper role of government in these areas and of the framework within which labour and management generally can solve problems arising from particular technological improvements. The government must play a leading role, and, in this respect, government's involvement with retraining and mobility programs is a necessary and legitimate one. So, too, is it becoming essential for government to act as the focal point for the collection and dissemination of information on what jobs may be available for a displaced employee and where such employment might be found. The Canada Manpower Centre fulfills a function which private industry or labour organizations could not perform on their own. Government's use of minimum standards legislation in order to regulate the work week is another way in which the state can balance the benefits of a growing economic capacity with the right of the individual to share accordingly.

In some areas government does not and could not have any responsibility for the cushioning of the effects of particular disruptions in the organization or methods of production in specific enterprises. For as Appendix V makes clear, there is no single solution applicable to all cases of workers displaced through technological change. Indeed, because the nature of the change, the numbers affected, the possibilities for future employment with the present employer -- which may be assured by various organizational devices -- the propriety of, and the ability to give, financial assistance, may vary, each individual case must be examined in its own terms while labour and management themselves have to work out the modalities of the adjustments required in the light of their special relationships. Thus, it is appropriate (and increasingly necessary) for management and labour to foresee the human, social and economic problems which can result from technological changes and to include in their collective agreements provisions for dealing with such situations. Where such occurrences cannot be foreseen, or the methods for dealing with them provided for in advance, it is clear that labour and management must together work out the applicable arrangements on a pro tempore basis. The nature of the arrangements which have been made in specific cases in Canada and the United States during the past two decades is elaborated in



## Chapter IV

Appendix V. As indicated there, labour and management may choose to reduce the work week for all employees so as to create more permanent jobs for some who otherwise would have to be laid off, or, by various devices, such as continuous work, or the spreading of vacations, may generate more permanent employment resulting in fewer jobs of a temporary nature. Labour and management may choose to rely on displacement of other workers in order of seniority, the so-called "bumping" process; or the payment of severance or other benefits to the workers affected; or early retirement; or on-the-job retraining; or the use of the attrition method to enable displaced workers to integrate themselves within some period of time into the functioning of the enterprise as it is structured after the implementation of the technological change.

These methods, of course, need not merely be used separately, but can in fact be used in combination. Nor is there any suggestion that the list of methods described in Appendix V is a complete one and that there is no more room for human ingenuity in this area. The important thing, as far as this Committee is concerned, is that it be recognized that lay-offs, which thrust displaced workers into a labour market which may not be prepared to receive them -- often leaving them without any saleable occupation -- are to be avoided as being inconsistent with the ability of an affluent society to temper the search for further growth with consideration for the individual members of that society who may be victimized in the process.

There is also an area in which the roles of the government on the one hand, and of labour and management on the other, must be bridged, and for this activity in Canada the Manpower Consultative Service has been established and it is under its auspices that the present Committee has been created. Indeed, the recent literature on, and experience with the subject of adjustments to technological change owes a good deal to this relatively new organism of our Federal Government under whose sponsorship some important contributions to knowledge and practice in this area have been made. The program which the Manpower Consultative Service sets for itself is to encourage the parties affected by technological changes to study methods of resolving the difficulties created,

and the adjustments necessitated, by such changes. The Federal Government pays the largest share of the expense of such studies.

While this Committee recognizes that each solution in a specific case must of necessity be made to measure, it is to be hoped that some of the solutions developed in this Report may be of assistance to management and labour in other firms and industries when similar problems present themselves. Indeed, the earlier studies under the auspices of the Manpower Consultative Service have been valuable to this Committee at the very least in developing some of the theoretical background against which the Committee came to grips with the problems facing it.

The ultimate question, of course, in any discussion of methods of dealing with technological change, must ask: where the financial burden of any study or any adjustment program should properly lie. It is true that technological change benefits society as a whole, but it is equally clear that it also benefits the particular enterprise in which it takes place, since, otherwise, the change presumably would not be implemented. The benefits which are realized by the employer are expected to be those of lower cost and more efficient production, whereas society benefits from the ability to re-allocate a certain number of the man hours which its labour force can furnish to making new products or more products. The burdens which result from almost any technological change (in the absence of appropriate terms and policies for easing the adjustments), are felt on two levels. On the micro (or individual) level it is borne by the particular workers whose status as surplus manpower may mean, instead of new opportunities, the loss of the capacity to be a useful wage earner. On the macro (or general) level it is a burden for society in terms of the development of a pool of people who are so-called "technologically-unemployed", who then present problems for society as a whole. Who, then, should pay the cost of enabling the redundant labour supply to make the transition to new jobs either with the former employer or in a new firm or industry in the same locality or elsewhere? Some economists reply that in a private enterprise economy it ill behooves society to place shackles on the incentive for technological progress which the profit motive represents. On the other hand,

## Chapter IV

it is evident that, in most cases, there are significant financial gains to the enterprise as the result of any major change (as demonstrated in the present case by the study undertaken by Mr. Ryba annexed to the present Report as Appendix IV). Should any of these savings be allocated to easing the situation of the employees affected? This Committee's answer to this question is contained in its recommendations in Chapter VI, and is based on its view of the relative responsibilities of government, on the one hand, and management and labour, on the other, in providing for the human element in adjustment to technological change. The conception of these relative roles has been developed in the literature to which reference is made in this Chapter and in Appendix V.

Technological change is as old as the hand tools and the social organization of man working and thinking to ease the burden of labour and increase the yield from his efforts. But the pace and scope of invention have in recent times altered the size and the consequences of the problem. It can no longer be determined by workers or management alone but it has become instead the responsibility of the whole country as well, speaking through government as its voice and its agent.



## CHAPTER V

### FINDINGS AND CONCLUSIONS: GENERAL AND PARTICULAR

Several months of study by, and discussion within the Committee, have now made it possible to arrive at certain conclusions and recommendations, unanimously. These recommendations and conclusions should be seen also within the context of the various studies prepared for the Committee, some of which are listed in the attached Appendices, and in the context also of the preceding Chapter, dealing with the development of national, public and private policies arising out of technological changes and their manpower consequences.

To the Committee's study should be added therefore the general debate in Canada and the U.S.A. in the matter of the fair treatment of redundant employees where the technological change is involved. In short, the analysis and findings of the Committee reflect, therefore, not only the detailed study and resolution of the specific dispute before it, but reflect also analogous problems and solutions in Canada and the U.S.A. Equally, the Committee was influenced by the theoretical discussions within, and the deep interest of, government, industry and labour, relating to the question of technologically displaced workers. Such statements as that of the Economic Council of Canada in November 1966, entitled "A Declaration on Manpower Adjustments to Technological And Other Changes", were necessarily valuable in shaping much of the general thinking of the Committee.

The Committee however was bound to undertake studies of its own directly related to the specific problems of those workers employed by the National Harbours Board, now actually or potentially displaced because of the introduction of technological changes in the unloading of grain vessels. These studies are included in the Appendices to this Report, in order that their influence on this Report can readily be ascertained and also because it is desirable to have such studies a matter of record.

## Chapter V

The Appendices are the following:

- I Report of Dufresne, McLagan, Daignault Inc. analysing the efficiency and safety aspects of the introduction of new methods to unload grain vessels in the Harbour of Montreal at the elevators of the Company. As part of this Report there is attached a study entitled "Grain unloading methods in Montreal Harbour", prepared by the National Harbours Board for the Committee.
- II Report of Mr. Kristoffy on behalf of the National Harbours Board in the matter of methods and costs of unloading grain vessels through "pneumatic" instrumentalities.
- III A study prepared by Mr. André Ryba dealing with the savings by the National Harbours Board in employing these new grain unloading methods.
- IV A study by Mr. André Ryba as to the percentage of base earnings of those employees, concerned in this dispute, derived from overtime, in a sample period 1962-66.
- V An analysis prepared by Mr. André Ryba of the experience with automation and redundant employees in other Canadian and U.S. situations and disputes, with general references to the literature and public philosophy in this matter.
- VI A table of workers made redundant by the introduction of new methods, their earnings, and seniority at the time of the changes and their present status and earnings.
- VII Letter from National Harbours Board to Committee, February 1st, 1967.
- VIII Form of Waiver.
- IX Extract from Canada Labour (Standards) Code, Sections 5-10.
- X Mandate of Committee (Manpower Assessment Incentive Program).



From these detailed studies and discussions certain general conclusions now emerge and it is important to set out these at this time in order to relate them to possible rights of the parties within the Collective Agreement as well as to the more broadly-based claims of the parties reflecting the emerging "national policy" in the matter of technological changes whether such claims may be found within the Collective Agreement or not. Indeed, it may be said that the Committee has always kept in mind its rather difficult mandate. On the one hand, it is clear that it could not expect these recommendations to be effective, or, perhaps even to be regarded as binding, if they were outside the Collective Agreement. On the other hand, the mandate of the Committee requires it to make recommendations which would contemplate a just "settlement" of the issue which gave rise to the dispute in the first instance even though the Committee has only powers of "recommendation" for some of the proposals which resulted from its deliberations.

Broadly speaking the Committee's conclusions may be summarized as follows:

#### GENERAL

1. The Committee believes that there is now developing a national policy in Canada to prevent undue hardship on employees resulting from technological changes in industry. That "hardship" may take several forms, of which loss of employment is the most severe. There may be loss of status because the new employment may not have the same image for the employee or his fellow workers. There may be seniority changes in which the re-employed worker may not have the same plant-wide or unit-wide seniority he held in his previous job. And, finally, there may be the psychological and personal difficulties arising out of the need to be trained for new skills which are necessary to obtain employment and the need to move to new locations if re-employment is not possible in the same area where he was previously employed. All these elements enter into the possible consequences of rapid technological changes.

## Chapter V

It is true, of course, that in a private enterprise economy change is part of the competitive process. To that extent every part of the economy faces the daily challenge of change. But in the normal course of events there may not be so abrupt an interruption of production and work patterns as those resulting immediately from technological improvements, particularly those associated with radical development in labour-saving devices and automation procedures. It is the sharpness of the technological change and the abruptness with which it deprives the employee of his existing employment and gives him so little time to adapt, that create the inequities, the hardships and the friction which are becoming so well known in the modern industrial setting.

Guidelines of a very general nature have begun to emerge from broad statements of government policy as well as from the effect of formulas emerging in the settlement of analogous disputes and from studies of the effects of technological change in several industries that have now been published. The Committee has considered the effects of these general and more specific guidelines in its own inquiry and it has concluded that certain principles may be said to be emerging both from governmental policy and from a number of analogous cases and reports.

2. The general principles which the Committee believes to be ascertained from the above sources may be summarized as follows:
  - a) It is becoming national policy and practice to mitigate the effects of technological change on the employability, income and status of the work force.
  - b) It is becoming national policy and practice to provide through the mechanism of federal or provincial agencies as well as through the co-operation of labour and management, facilities for training programs, and to assist the worker financially while acquiring new skills through payment of allowances when undergoing such training programs.

- c) It is becoming national policy and practice to try to prevent unemployment resulting from technological changes but where it may be impossible to prevent job deprivation in such cases, it is also becoming policy to cushion the effects of unemployment due to such changes through allowances paid while undergoing training; through unemployment insurance, through generous mobility allowances for the resettlement of employees in areas where the demand for labour is greater; through the use by industry of the Manpower Consultative Service and other instrumentalities of government that are concerned with the cushioning of such effects; and finally, through the Canada Manpower Centres.
- d) It is becoming policy and practice of the Government of Canada to encourage firms to study jointly with unions the problems of technological change so as to anticipate their effect and to minimize their consequences insofar as this may lead to the reduction of work force required. In this connection, the Committee is of the opinion that the central role of government, both Federal and Provincial, in developing modern and effective manpower policies with particular reference to technological change necessarily requires the creation by government of research programs and research reference facilities to aid unions and management better to understand and solve the problems created by technological change.
- e) It is a conclusion derived from the several formulas now emerging from recent studies and recommendations occasioned by disputes caused by the introduction of technological changes that there are a number of programs being developed for the settlement of disputes such as the following: retention of workers as much as possible; maintenance of seniority as much as possible; the development of funds to offset reduced incomes when retained in employment as much as possible; reliance on attrition to slowly reduce redundancies; lump sum payments for those workers who must leave or wish to leave



## Chapter V

the work force; advance notice to the union and mutual discussion concerning technological changes.

These formulas and programs are likely to become, increasingly, the accepted pattern of dispute settlement in labour relations over the years to come.

3. The combined effect of the developing national policy as expressed by government, and the cumulative experience with enquiries and reports arising out of technological change in recent years, now make it unreasonable for changes that lead to an abrupt reduction of the work force to be treated as if these were a matter solely of managerial discretion with no employee "rights". Unions and management should be regarded as having equal claims to raise questions involving the consequences brought by technological change and to solve the same.
4. It is the considered conclusion of this Committee that both within the Collective Agreement between the Syndicates and the NHB and outside of the Agreement in more general terms, there may be evolving a broad obligation on the part of the management to be sensitive to and aware of the consequences of introducing manpower saving devices and to take steps to mitigate these consequences to the best of its ability; and also an obligation on the National Harbours Board to establish, together with the Syndicate, a procedure, the application of which would permit the study of the effects of future technological changes and the resolution of disputes. This procedure could include, particularly, a notice period appropriate to each type of technological change.

To the extent that the Collective Agreement itself (to be discussed below) may not, in fact, cover this general obligation, it is the considered opinion of this Committee that the parties would be well advised at the next opportunity, to redesign the Collective Agreement accordingly.

5. The Government of Canada has not announced in any policy statements that it is willing to assume the financial burden implicit in the execution of its "cushioning" policies as summarized above - policies which seem derived from its more general development of modern manpower programs. Nevertheless, the Committee is of the opinion that Government should advance these policies of preventing unemployment or mitigating the effects of technological changes by sharing in the often serious costs to be borne by industry in any such cushioning program. These costs should be shared through appropriate agreements with industry. While this general conclusion may seem to open the door to many claims for assistance by enterprises faced with the cost of redundant employees or mitigating the effects on them, nevertheless, the principle of subsidizing enterprises or human beings faced with financial burdens and carried on in the name of broad national policy, is by no means new. That support already operates extensively in the relations of the Federal Government to many entrepreneurial activities, e.g. coal mining and coal transportation; gold mining; grain freight rates; assistance to manufacturers adversely affected by the Automobile Parts Agreement with the U.S.; Prairie Farm Assistance Act.

From discussions, and from the data assembled in Mr. Ryba's survey (Appendix V) the Committee believes that the actual requests by industry to the government will be minimal in view of federal retraining programs and attrition which respectively retrain or remove such personnel, and because productive savings resulting from new improved procedures may more than offset any remaining burdens on industry. This is not to say that management must bear the whole cost even though there are large net gains from these improvements. Indeed, some partnership between industry and government may be equitable in such cases so that the proper productive gains from these changes shall not be unduly reduced by requiring management itself to alone subsidize the prevention of unemployment or the mitigation of effects of these technical changes.



PARTICULAR

6. In the present case, the Committee is of the opinion that in the light of the above policies by government and the tendencies in industry, there is reason to expect the National Harbours Board to make every effort to retain in their employment all persons who can be given productive work to do, and to make some provision for employees whose income is being reduced in consequence of these changes, even though they are given such other employment.

It is worth noting in this connection that on February 1st, 1967, the National Harbours Board voluntarily offered to the Committee (See Appendix VII), to retain in employment all the persons affected by the technological changes giving rise to present dispute. Exclusive of certain temporary employees, the number of workers affected, as indirectly analyzed in the Dufresne Report, were 66. Thus, as of February 1st, 1967, it was the intention of the National Harbours Board to prevent any resulting unemployment by retaining the workers so affected. This being so, the Committee is of the opinion that this voluntary undertaking by the National Harbours Board provides a link for the Committee to move towards a recommendation that would preserve as far as possible employment within the Company for those affected. It will be noted that the letter of the National Harbours Board makes no reference to preserving, at any level, the income of the employees affected, and makes no reference to any obligation arising out of the Collective Agreement with respect to those employees.

7. Considering all the above effects, policies, and other information before the Committee, the Committee has concluded further that the settlement of this dispute would be best achieved by finding some formula which reflects broadly the national policies referred to by retaining the employees and mitigating the effects of change on them, while at the same time doing justice so far as possible both to the claims of the workers involved as a group, as well as to their claims as individuals.

This problem may be stated as follows: Was there a binding obligation under the Collective Agreement, specifically under Article 27, which required the Company to perform certain acts, e.g. seniority recognition, opportunities for adaptation to new techniques, or alternative employment, which would meet the claim of an individual worker affected by technological change?

If the answer to this question were to be "yes", then it would be necessary strictly speaking to examine the precise "rights" of each of the workers affected by the present dispute. In such an examination, questions of seniority, skills, and adaptation to new techniques are involved (Article 27.01); questions of equivalent employment and seniority (Article 27.02); and questions of severance pay for those employees laid off (Article 27.04).

For the Committee, the problem has been whether to attempt to solve the dispute before them by some rigorous application of Article 27, or instead by some more general formula, which would meet the needs of equity and not be limited, or unduly extended, by technical claims based upon the Collective Agreement.

There clearly are good arguments for and against resorting to the Collective Agreement. Indeed, in the opinion of the Committee, it would be quite improper, in principle, to render an award or to make a recommendation that does not take into account the actual rights of the parties under the then applicable Collective Agreement. The Committee has gone to the trouble of ascertaining the names, previous employment and earnings, present status, and present wage rates of all of the workers affected by the technological change at issue. Their names, etc. are set out in Appendix VI. If Article 27.01 were so interpreted as to give them "bumping" and "adaptation" rights, as well as "bumping" and "equivalent job" rights under Article 27.02, then it would be quite improper for this Report not to recognize these particular rights.

## Chapter V

On the other hand, the employees affected by these changes have a great deal in common among themselves, and they also have a great deal in common with other members of their local, the remainder of whom have other jobs with the National Harbours Board, and who for the most part are well established, each with his own seniority. One important effect of such an interpretation of Article 27, on behalf of each claimant would be the impact of such claim upon some other worker and fellow Syndicate member. The Committee has concluded therefore that the more equitable way to dispose of this dilemma was to make it clear that while there are claims under Article 27 which could be interpreted to give each of the persons listed in Appendix VI, a "right" of some kind to "bump" and be trained or to equivalent employment, it would be in the interest of these men, and all the others affected, and in the interest of the relationship of all the parties, if some more broadly based formula could be determined which would give to each of these employees, a fair result without putting him in the position where he had to "bump" or injure the position of another employee in the local. To put it plainly, it is evident that the normal seniority claim process, with or without opportunities of adaptation to the new techniques, was not the better road towards a solution of the problems emerging from this dispute. Indeed, the strict application of a seniority rule might have led to fresh irritations and disputes. As the detailed analysis in Appendix V makes clear, there are other examples where seniority rules have been found to be inappropriate in cases of technological change so that the discovery of its particular difficulty in this case should not come as a surprise.

For these reasons, the Committee has concluded that despite such a possible interpretation of Article 27 as may have given training and equivalent employment "rights" to many of the employees involved in this dispute, the best interests of the parties would be served by an award such as that contained in this Report. It is essential



to point out that the Committee considers it an indispensable condition of this award that the National Harbours Board be entitled to require from the employees concerned a waiver of their possible claims under Article 27 in a form similar to that annexed hereto as Appendix VIII. This will produce an award which does justice to the parties interests without promoting fresh difficulties for other employees.

The Committee does not seek to minimize, by these conclusions, the fundamental importance of seniority rights. It seeks only to state, at this time, that without, in any way, diminishing these rights under the Collective Agreement, the present award has as its object a sense of equity. Indeed, the Committee is bound to observe that seniority rights frequently may not be an appropriate mechanism for the solution of disputes arising from technological change.

8. The Committee also concluded that for those employees who are retained in employment, something should be done to familiarize them with the fact that their loss in income has been recognized as "real", and that the Company is making some effort to compensate them even though their original earnings can not be matched fully under the formula which follows below. It will be seen from Appendix IV that a large portion of their earnings were due to overtime for those employees concerned here. But such overtime is no longer permitted by law to the same extent (See Appendix X). It is likely that such workers will now receive earnings based upon a twelve-month period and not an eight-month period, so that a certain steadiness may enter into the nature of their employment which may not have been there before, since most of the employees involved in this dispute averaged only eight months of work with heavy overtime. Of course, the Committee is aware that such employees were able in the remaining four months to find other jobs or to draw unemployment insurance but that is not a persuasive argument because of the more general desirability of steady employment throughout the year.

## Chapter V

Finally, the Committee wishes to emphasize the importance of not merely settling the present dispute but to have this report become the basis for the development of methods that may anticipate future disputes between the parties in the matter of technological change, and also, hopefully, the Committee would like to believe that the present report may assist other industries facing similar problems.



## CHAPTER VI

### RECOMMENDATIONS

The Committee therefore recommends:

1. That all of the employees listed in Appendix VI, for whom there is productive work available, as determined by both the National Harbours Board and the Syndicate, shall continue to be employed by the Board at the rate stated in the current Collective Agreement applicable to the job from time to time held or to be held by them and without loss of seniority of employment. In addition, the said workers shall receive a special grant of \$100.00 for each year of service with the National Harbours Board, the said grant to be paid in the following form:

Every such worker shall receive, for each hour worked, a sum in cents per hour, equivalent to the difference between the hourly rate enjoyed by him immediately before the introduction of the new unloading methods and the change in his work status - as such rate and status are shown in Appendix VI - and the hourly rate applicable to the job from time to time held by him after that time, as provided in the Collective Agreement which expired 31st December 1966, until the total of such payments shall equal the sum of \$100.00 times the number of years of service of such an employee.

Promotions which eliminate any such difference shall not affect an employee's right to this compensation if, during the two-year period following the date of presentation of this Report, the employee is subsequently demoted to a classification which, under the Collective

## Chapter VI

Agreement which expired 31st December 1966, carried a rate less than that enjoyed by such employee before the introduction of the new unloading methods, as shown in Appendix VI. Further, for the workers for whom there is no employment, as determined by the parties before the date of the opening of the 1968 shipping season, or for those workers so affected who voluntarily wish to leave the employment of the National Harbours Board, and who so advise the National Harbours Board within 90 calendar days from the presentation of this Report, the provisions of Article 27.04 of the Collective Agreement shall be applied, whatever their legal significance and irrespective of the fact that the Committee is aware that less than 50% of the bargaining unit is involved in this dispute.

All payments on account of the special grant referred to above made to workers remaining in the employment of the Company shall be paid in the ordinary manner together with the regular earnings of the worker concerned. This special grant referred to above shall be paid by the National Harbours Board.

2. It is further recommended that the Government of Canada consider compensating the National Harbours Board for this amount for the reasons expressed above in Chapter V.
3. The Committee further recommends that because of the need to define more clearly the procedures for studying the consequences of technological change, the parties shall attempt to agree on provisions for inclusion in the next Collective Agreement, which provisions shall, wherever possible, incorporate the experiences gained from the present dispute and studies and Report.

These procedures should lead to the company obtaining the highest level of efficiency in its operation, while at the same time the employees are given full opportunity to avoid undue hardship

resulting from abrupt changes in the level of the work force.

4. The Committee recommends that the National Harbours Board follow the practice of filling new vacancies as these become available, with personnel from the existing force in accordance with the provisions of the Collective Agreement.
5. The Committee further recommends that the parties should make use of all government services in order to study the effects of technological change and to assist in dealing with the employees so affected.
6. The recommendations in this Report with respect to the special grant, as set out in recommendation No. 1, shall take effect as of January 1st, 1967.

In the event that any interpretation is required with respect to the meaning of the above recommendations, such interpretation shall be made by the present Committee.

This report is unanimous.

March 6th, 1968.

(Signed)

Maxwell Cohen, Q.C. (Chairman)

Marius Bergeron, Q.C.

Roger Comtois

A.R. Drolet, Eng.

(Signed)

J.P. Héту

Stanley H. Hartt, Secretary

Angelo Forte, Department of  
Manpower and Immigration.



## APPENDIX I

Report of Dufresne, McLagan, Daignault Inc. analyzing the efficiency and safety aspects of the introduction of new methods to unload grain vessels in the Harbour of Montreal at the elevators of the Company. As part of this Report there is attached a study entitled "Grain unloading methods in Montreal Harbour", prepared by the National Harbours Board for the Committee.





DUFRESNE, McLAGAN, DAIGNAULT INC.

Management Consultants

Montreal, December 13, 1966.

The Chairman,  
Mr. Maxwell Cohen, Q.C.

The Members of the Study Committee  
Mr. M. Bergeron, Q.C.  
Mr. A. R. Drolet  
Mr. J. P. Hétu  
Mr. R. Comtois

Gentlemen:

Under the terms of the mandate conferred on me by the Committee on November 22, 1966, I have studied the methods of unloading cereals in Montreal Harbour and herewith respectfully submit my report on the matter.

I would like to express my gratitude for the complete cooperation accorded both to myself and to the observers engaged in this work by the grain unloaders employed in the harbour, the foremen and all the technical staff of the National Harbours Board.

Yours truly,

(sgd.)

Pierre N. Dufresne, Engineer.



REPORT BY PIERRE N. DUFRESNE

TO

THE STUDY COMMITTEE ON LABOR PROBLEMS

(MONTREAL HARBOR - GRAIN ELEVATORS)

December 13, 1966





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I - MANDATE





I. MANDATE:        A STUDY BY MR. PIERRE N. DUFRESNE IN HIS  
CAPACITY AS CONSULTING ENGINEER TO THE  
STUDY COMMITTEE ON LABOR PROBLEMS  
(Montreal Harbor - Grain elevators)

- A.    To study grain ship unloading operations, i.e. unloading by means of a Front-end loader, to determine by time study the number of men needed in the work team to insure that the operation is carried out efficiently and with due attention to the safety of the workers concerned.
- B.    To formulate recommendations for improving the efficiency of the proposed method (unloading by means of a Front-end loader), taking into consideration safety, physical effort and working conditions in general.
- C.    To perform the research necessary to obtain information on the other two methods of unloading, and to carry out studies on them. These methods are:
  - Power shovel assisted unloading.
  - Pneumatics assisted unloading.

The object of these studies is to evaluate the economic efficiency of the new method and to formulate appropriate recommendations.

- D.    The study shall be carried out by Mr. Pierre N. Dufresne or his chosen representative, accompanied by representatives of the two parties concerned at their own discretion.
- E.    The fees shall be \$25.00 per hour for Mr. Pierre N. Dufresne and \$20.00 per hour for his representative.

The study shall be completed and the report submitted on or before December 1, 1966.

## Appendix I

The total amount of fees would thus be as follows:-

		Adviser	Pierre N. Dufresne
WEEKS	Oct. 24 - Oct. 28	40 hours	8 hours
	Oct. 31 - Nov. 4	40	8
	Nov. 4 - Nov. 11	40	8
	Nov. 14 - Nov. 18	40	8
	Nov. 21 - Nov. 25	40	8
	Nov. 28 - 29 - 30	<u>        </u>	<u>24</u>
		200 hours	64 hours

200	x	\$20.00	=	\$4,000
64	x	\$25.00	=	<u>\$1,600.</u>

TOTAL FEES		\$5,600.-maximum
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If circumstances beyond the control of Mr. Pierre N. Dufresne, such as work stoppage, bad weather or others, should make it impossible to complete the work or submit the report on or before December 1, 1966, the fees for the work performed will be recognized by the Committee.

II - DEFINITION OF TERMS AND GLOSSARY





## II. DEFINITION OF TERMS AND GLOSSARY

The method of work measurement used in this study is based on the principle of standard minutes, i.e., the normal performance equivalent to the speed of the movements of the members of a man of average physical strength walking without load over level ground at a speed of three miles an hour.

The definitions of the following terms illustrate the method of work measurement used.

### A. ACTUAL OR OBSERVED TIME

Time taken to perform the work element, measured by stop-watch, without taking into consideration the work method, performance or any other factor.

### B. NORMAL MINUTES

Normal minutes represent the time taken to perform a work element if the worker works at a normal rate.

Normal minutes are the product of the minutes observed, multiplied by a performance rating based on a speed of three miles an hour.

The normal time thus obtained is generally the product of a selected number of observed times multiplied by the corresponding performance rating.

### C. STANDARD MINUTES

The standard time for a work element is the sum of the normal time plus a personal and fatigue allowance. Personal and fatigue allowances are generally expressed as a percentage of the normal time.

### D. WORK TIME

Time during which the worker must exercise a predominantly physical effort which can also be accompanied by a mental and visual effort in order to accomplish a specific task.

## Appendix I

### E. UNAVOIDABLE DELAY

Time during which a worker must wait for others to finish an operation. Unavoidable delay can be replaced by work time by means of a redistribution of tasks.

### F. ATTENDANCE TIME

Time during which an employee must exercise visual effort whilst awaiting further orders.

### G. IDLE TIME

Additional or surplus time which a worker passes after completing his work and using the time allowed for personal needs and relaxation.

GLOSSARY OF TERMS USEDENGLISH TERMSFRENCH TERMSMETHODS OF UNLOADING:

Power shovel assisted unloading	Déchargement au moyen de pelles mécanisées
Pneumatics assisted unloading	Déchargement pneumatique
Front-end loader assisted unloading	Déchargement au moyen de chargeuses sur roues

EQUIPMENT:

Power shovel	Pelle mécanisée
Suckers	Aspirateurs
Nozzle	Bouche d'aspirateur
Front-end loader	Chargeuse sur roues
Marine Leg	Jante marine
Marine tower	Tour marine
Shovel (manual)	Pelle (manuelle)
Remote controls	Boite de contrôle
Ladder	Echelle
Hold	Compartiment de la cale

## Appendix I

### ENGLISH TERMS

### FRENCH TERMS

#### OPERATIONS:

Dipping	La plongée
Clearing	Déblaiement
Cleaning	Nettoyage
Final clean up	Nettoyage final
Rigging	Appareillage
Shovelling (large power shovels)	Pelletage (grande pelle mécanisée)
Shovelling (smallpower shovels)	Pelletage (petite pelle mécanisée)
Swinging of shovels	Déplacement latéral des pelles

#### OPERATORS:

Pipeman	Opérateur des contrôles
Nozzleman	Préposé à l'aspirateur
Front-end loader operator	Opérateur de chargeuse sur roues



III - PERSONAL NEEDS AND REST



III. PERSONAL AND REST ALLOWANCES

1. The amount of physical effort required and the conditions at the work station will determine the amount of rest needed by the worker if he is to perform his job at a normal rate or higher. A period of time is also needed for personal needs.

Thus the normal time for each element of work or attention must be increased to allow for personal needs and relaxation. This gives the standard time for each element of work and attention.

2. In order to establish fatigue and personal allowances, it is necessary to evaluate and record the nature of each element of work or attention as well as the working environment. The percentage of fatigue and personal allowances at each level of effort are given in Table 1.
3. Table 1 gives the rest and personal allowances necessary under normal working conditions. Certain elements, however, are carried out under abnormal working conditions. Table 2 is used in such cases. This Table uses two abnormal working conditions and gives a conversion factor which is used to increase the normal personal and rest allowances given in Table 1.
4. The use of Table 2 must take into account the degree of exposure of the worker to the abnormal conditions. The presence of intense heat, cold or a dusty atmosphere does not necessarily mean that the worker is exposed to these abnormal conditions. The wearing of protective clothing or some other form of protection must be taken into consideration.

Time study workers must take all these factors into consideration and relate them to all the work elements.

5. The use of rest allowances requires the observer to effectively assess and classify each element of work and attention. This classification must take

## Appendix I

into consideration the various types of work and surrounding conditions. The classification is recorded by the assignment of an appropriate code number. For example: absence of physical effort and absence of attention under normal working conditions might be classified as 1 A; a minimum of physical effort under normal working conditions might be classified as 2 A; attention but absence of physical effort under normal working conditions might be classified as 2 A, and under extreme abnormal conditions 2 C; attention accompanied by moderate physical effort under normal working conditions, 4 A; etc.

6. The appropriate code is obtained from Tables 1 and 2. The percentage allowance is then found in Table 3, and is then used to convert normal time into standard time. For example, let us assume that the pipeman takes 2.0 minutes of normal time to lower the nozzle. The work classification of Table 1 is "Minimum Physical Effort", Code 2, and the working conditions obtained from Table 2 are Class B -- thus the complete code number is 2 B and, referring to Table 3, we find that the rest and personal allowance is 12.5% of normal time. The standard time is thus 2.0 minutes plus 12.5% of 2.0 minutes, giving a total of 2.5 minutes.
7. Table 4 gives the codes and percentages of the relaxation and personal allowance for the three classifications of workers studied, namely pipeman, nozzleman and front-end loader operator.

TABLE 1

CLASS OF WORK - CODE NO.	<u>EXAMPLE OF BASIC ELEMENTS</u>	REST AND PERSONAL ALLOWANCES IN % OF NORMAL TIME FOR THE ELEMENT <u>IN QUESTION</u>
1	No physical effort and no attention required.	
	Inevitable waiting time during unavoidable delays. This may include waiting for repairs, foreman's instructions or waiting while other workers complete an operation.	7
2	A minimum of physical effort: <u>Attention</u> without physical effort, attention accompanied by a minimum of physical effort. Work involving the use of tools and light materials, e.g. the operation of controls.	10
3	Light physical efforts: attention accompanied by light physical efforts. Light physical efforts involving the use of light tools, slight pushing actions, reaching and leaning, e.g. the use of shovels and nozzles.	15
4	Moderate physical efforts. Moderate physical effort involving the use of tools and materials which require considerable physical effort; the performance of a task requiring attention accompanied by moderate physical efforts, e.g. putting up a ladder, operating front-end loaders.	20



# Appendix I

TABLE 2

<u>WORK CONDITIONS CODE NUMBER</u>	<u>DESCRIPTION OF WORK CONDITIONS</u>	<u>CORRECTION FACTOR</u>
A	Normal work conditions.	1.0 use Table 1
B	Exposure to temperatures and climatic conditions more severe than those prevailing in other work areas.	1.25 multiply the allowances in Table 1 by 1.25
C	Exposure to and work in a dusty atmosphere, e.g. work in a ship's hold.	1.50 multiply the allowances in Table 1 by 1.50

TABLE 3REST ALLOWANCES - CONVERSION FACTORTABLE 1  
CODE NO.TABLE 2    --    CODE NO.

	A	B	C
1	7.0%	9.0%	10.5%
2	10.0%	12.2%	15.0%
3	15.0%	19.0%	22.5%
4	20.0%	25.0%	30.0%

## Appendix I

TABLE 4

FATIGUE AND PERSONAL ALLOWANCES

<u>WORK CLASSIFICATION</u>	<u>TABLE 1 CODE</u>	<u>TABLE 2 CODE</u>	<u>TABLE 3 %</u>
Pipeman	2	B	12.5
Nozzleman	3	C	22.5
Front-end loader operator	4	C	30.0

IV - TIME STUDY





#### IV. TIME STUDY

Time studies were carried out, firstly on the unloading cycles in order to establish the average speed of unloading during the various stages, and secondly on the work operations of the employees carrying out unloading using a front-end loader.

##### STUDIES ON THE CYCLES

In order to calculate the normal duration of a typical unloading operation, we established by time study the average speed of unloading during the two principal stages, i.e. dipping and cleaning. The two methods studied were the front-end loader method and the power shovel method. The results obtained exclude abnormal stoppages or delays and are representative of a normal unloading operation. We mean by abnormal stoppages and delays, delays caused by bad weather, lack of space in the elevators, lunch periods and other similar reasons.

The study was carried out in this manner, excluding all abnormal stoppages, in order to determine the work load of the employees concerned under the strictest possible conditions. When such stoppages occur, the work content for the whole unloading operation remains the same, but the total length of time is extended. If the employees are not required to go and work elsewhere, the work load is reduced in consequence; when the employees are required to go and perform work elsewhere for the duration of the abnormal delay, the work load for the unloading of grain remains the same.

Tables IV-1 and IV-2 of the present section give summaries of the studies on the cycles. Table IV-1 shows studies of power shovel unloading.

Table IV-3 shows the basic figures obtained from the studies which will be used in calculating the normal duration of a typical unloading operation.

## Appendix I

Table IV-4 shows the total duration of the unloading cycle for a typical hold containing 150,000 bushels at elevators 4 and 5 and using the following methods:-

- a) Unloading by means of front-end loaders;
- b) Unloading by means of power shovels.

### STUDIES OF THE OPERATIONS

We measured by time study the work elements of the clearing, cleaning and final clean-up operations in the case of unloading by means of a front-end loader, in order to establish a normal value for each of these elements.

We added to these normal values the percentage of rest required, as established in the section "Rest and Personal Needs".

Specification 100, which is annexed to the present section, represents the standard time for the clearing operation for pipemen and nozzle-men.

These values apply to all unloading operations using the above-mentioned method.

Specification 101 represents the standard time for the cleaning operation and only applies to the typical unloading specified in its title.

The standard time for this operation varies according to the quantity of grain to be cleaned.

Specification 102 represents the standard time for the final clean up operation for pipemen and nozzle-men. These values apply to all unloading operations using the above-mentioned method.

SUMMARY - UNLOADING CYCLES  
FRONT-END LOADER

TABLE IV-1

No. of studies No. of elevators Grain	1 5 Wheat No. 2	2 3 Wheat No. 2	2 3 Wheat No. 2	3 3 Wheat No. 2	4 5 Malt	AVERAGE	
						3	5
Dipping time	3.3hrs.	3.5hrs.	4.4hrs.	3.6hrs.	3.2hrs.	11.5hrs.	6.5hrs.
Bushels	80,000	77,000	90,000	76,800	75,000	243,800	155,000 (50% of total)
Bu/hr.during dipping	24,242	22,000	20,455	21,333	23,438	21,200	23,846
Clearing time	0.9hrs.	0.9hrs.	1.2 hrs.				
Cleaning time	3.9hrs.	3.8hrs.	4.3 hrs.				
Final clean-up time	0.3hrs.	0.3hrs.	0.3 hrs.				
Total cleaning time	5.1hrs.	5.0hrs.	5.8hrs.			15.1hrs.	5.1hrs.
Bushels	88,500	75,000	91,000			234,000	88,500
Bu/hr.during cleaning	17,353	15,000	15,690			15,497	17,353
Total unloading time	8.4hrs.	8.5hrs.	10.2hrs.			26.6hrs.	8.4hrs.
Total bushels unloaded	168,500	152,000	181,000			477,800	168,500
Average bu/hr.	20,060	17,882	17,745			17,962	20,060

SUMMARY - UNLOADING CYCLES  
POWER SHOVELS

TABLE IV-2

	AVERAGE			
	1	2	3	4
No. of studies	1	2	3	4
No. of elevators	4	4	4	4
Grain	Wheat No.2	Ex 4 CWAD	Wheat No.1	
Dipping time	2.0 hrs.	2.7 hrs.	4.9	12.9
Bushels	47,535	76,529	169,055	381,119 (75% of total)
Bu/hr.during dipping	23,768	28,344	34,500	29,544 (27,635 average elev. 4 and 5)
Rigging time		0.2 hrs.	0.2 hrs.	
Shovelling time				
(large power shovels)		2.0 hrs.	1.9 hrs.	
Shovelling time				
(small power shovels)		0.3 hrs.	0.3 hrs.	
Total cleaning time	1.5 hrs.	2.5 hrs.	2.4 hrs.	7.9
Bushels	19,600	32,760	44,292	116,652
Bu/hr.during cleaning	13,067	13,104	18,450	14,766
Total unloading time	3.5 hrs.	5.2 hrs.	7.3 hrs.	20.8
Total bushels unloaded	67,135	109,382	213,347	498,074
Average bu/hr.	19,181	21,035	29,225	23,945

TABLE IV-3

BASIC FIGURES FOR THE CALCULATION  
OF THE CYCLES

AVERAGE UNLOADING SPEED

a) During dipping	- elevator 3	21,200 bu/hr.
	- elevators 4 & 5	27,635 bu/hr.
b) During cleaning	- front-end loader	17,353 bu/hr.
	- shovels	14,766 bu/hr.

QUANTITY UNLOADED DURING DIPPING

a) Unloading by means of power shovels	75% of total
b) Unloading by means of front-end loaders	50% of total



TABLE IV-4CALCULATION OF THE CYCLETYPICAL HOLD - 150,000 BUSHELS - ELEVATORS 4 & 5(A) Unloading using front-end loader

Dipping	$(150,000 \times 50\%) + 27,635$	2.71 hours
Cleaning	$(150,000 \times 50\%) + 17,353$	<u>4.32 hours</u>
TOTAL CYCLE		<u>7.03 hours</u>

(B) Unloading using power shovels

Dipping	$(150,000 \times 75\%) + 27,635$	4.07 hours
Cleaning	$(150,000 \times 25\%) + 14,766$	<u>2.54 hours</u>
TOTAL CYCLE		<u>6.61 hours</u>

WORK SPECIFICATION  
UNLOADING BY MEANS OF FRONT-END LOADER

OPERATION: CLEARING

<u>WORK ELEMENTS</u>	<u>NORMAL MINUTES/HOLD</u>	
	<u>PIPEMEN</u>	<u>NOZZLEMEN</u>
1. Position sucker or go down into hold	1.95	1.95
2. Operate controls	57.20	-
3. Clear - work	-	47.50
- unavoidable delay	-	9.70
4. Withdraw sucker or leave hold	2.15	2.15
5. Take down front-end loader	4.10	-
Total normal minutes/hold	65.40	61.30
12.5% personal and rest allowance	8.18	-
22.5% personal and rest allowance	-	13.79
Total standard minutes/hold	73.58	75.09
Total standard hours/hold	1.23	1.25

Specification No. 100

## Appendix I

### WORK SPECIFICATION

#### UNLOADING BY MEANS OF FRONT-END LOADER

OPERATION: CLEANING

TITLE: FRONT-END LOADER OPERATOR

<u>WORK ELEMENTS</u>	<u>NORMAL MINUTES PER HOLD</u>
1. Assist in lowering the front-end loader, go down into hold, prepare, clean and wait. Assist in hauling up the front-end loader and come up from the hold.	
3.3. actual hours x 120% performance	3.96
2. Additional time to go down into and come up from hold when replaced.	
(4.10 n.m./occ. x 2 occ/hold ÷ 60)	<u>.14</u>
Normal total hours per hold	4.10
30% personal and rest allowance	1.23
Total standard hours per hold	5.33
Data:	
Dipping	2.7 hrs.
Clearing	1.0 hrs.
Cleaning and final clean up	<u>3.3 hrs.</u>
Total Cycle	7.0 hrs.

Specification 101

# Appendix I

## WORK SPECIFICATION

### UNLOADING BY MEANS OF FRONT-END LOADER

<u>WORK ELEMENTS</u>	<u>NORMAL MINUTES PER HOLD</u>	
	<u>PIPEMEN</u>	<u>NOZZLEMEN</u>
1. Position the sucker or go down into the hold	1.95	1.95
2. Operate controls or clean with sucker	14.50	14.50
3. Withdraw sucker or come up from hold	2.15	2.15
4. Withdraw front-end loader	<u>5.55</u>	<u>-</u>
Total normal minutes per hold	24.15	18.60
12.5% personal and rest allowance	3.02	-
22.5% personal and rest allowance	-	4.19
Standard total minutes per hold	27.17	22.79
Total standard hours per hold	.45	.38

Specification 102





V - WORK LOADS



V. WORK LOADS

Methods of unloading by means of front-end loader:

Table V-1 of the present section shows the calculation of the standard work hours for unloading grain from a typical ship having six holds and containing 150,000 bushels per hold, as unloaded at Elevator No. 5 using front-end loader.

Table V-2 was also prepared to illustrate the distribution of activities of the various operators during the unloading, using the times which appear in section IV, Table IV-4.

Table V-3 shows the distribution of work time, rest and personal allowances and free time for each individual occupation and for the group.

The work load for the group is thus 49.8%, i.e. 61.6 standard work hours for a total of 123.6 hours paid.

Method of unloading by means of power shovels:

A synchronized time chart was prepared using the times given in the same Table IV-4 for the above method. This chart appears in Table V-4.

As indicated, the group work load is 35%, i.e. 221.8 standard work hours for a total of 633.6 hours paid.

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TABLE V-1

CALCULATION OF TOTAL STANDARD HOURS

Typical vessel with 6 holds - 150,000 bushels per hold -  
Elevator No.5 - Unloading by means of front-end loader -  
One or two marine legs in operation

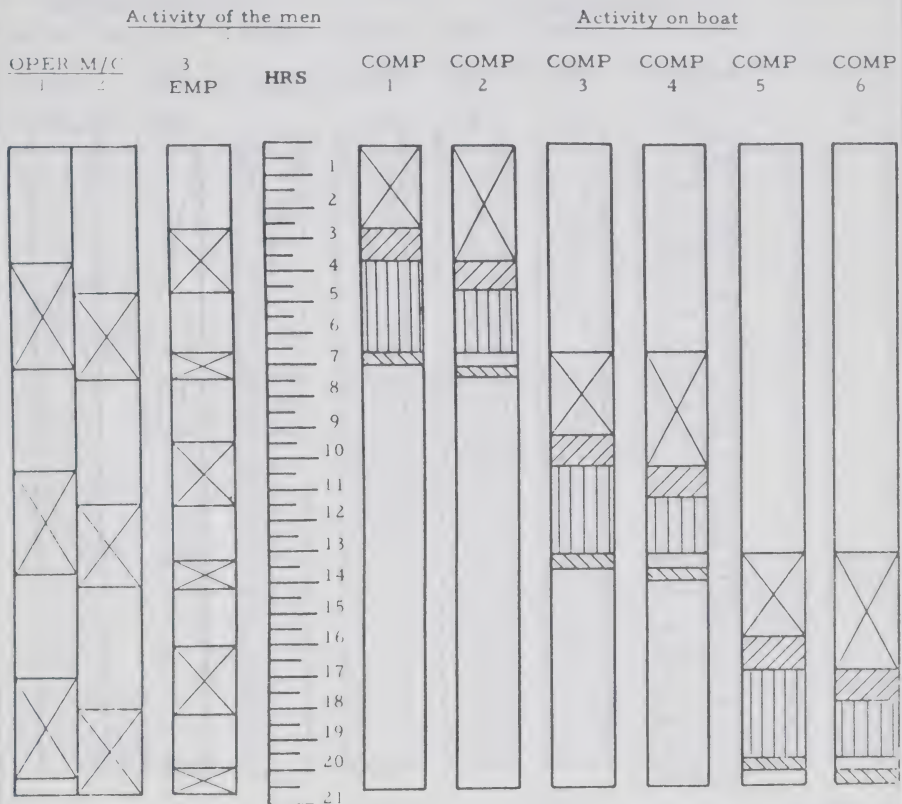
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<u>SPEC.</u> <u>NO.</u>	<u>OPERATION</u>	<u>CALCULATIONS</u>	<u>STANDARD</u> <u>MAN-HOURS</u>
100	Clearing: Pipeman	1.23 st. hrs. per hold x 1 man x 6 holds	7.38
	Nozzlemen	1.25 st. hrs. per hold x 2 men x 6 holds	15.00
101	Cleaning: Front-end loader operator	5.33 st. hrs. per hold x 1 man x 6 holds	31.98
102	Final clean-up: Pipeman	.45 st. hrs. per hold x 1 man x 6 holds	2.70
	Nozzlemen	.38 st. hrs. per hold x 2 men x 6 holds	<u>4.56</u>
Total standard man-hours			<u><u>61.62</u></u>

## SYNCHRONIZED TIME CHART

Typical vessel with 6 holds - Elevator No. 5

Unloading by means of front-end loader 150,000 bushels per hold - two marine legs in operation



111Y

## Work

## Down time



KEY:

## Dipping

## Clearing

## Cleaning

### Final clean-up

## Down time



Total actual man-hours

123. c.

Actual work hours

42.0

Normal work hours

412. 5

### Standard work hours

$$t = 1, t_1$$

### Task

49. x.

Total cycle: 20.0 hrs

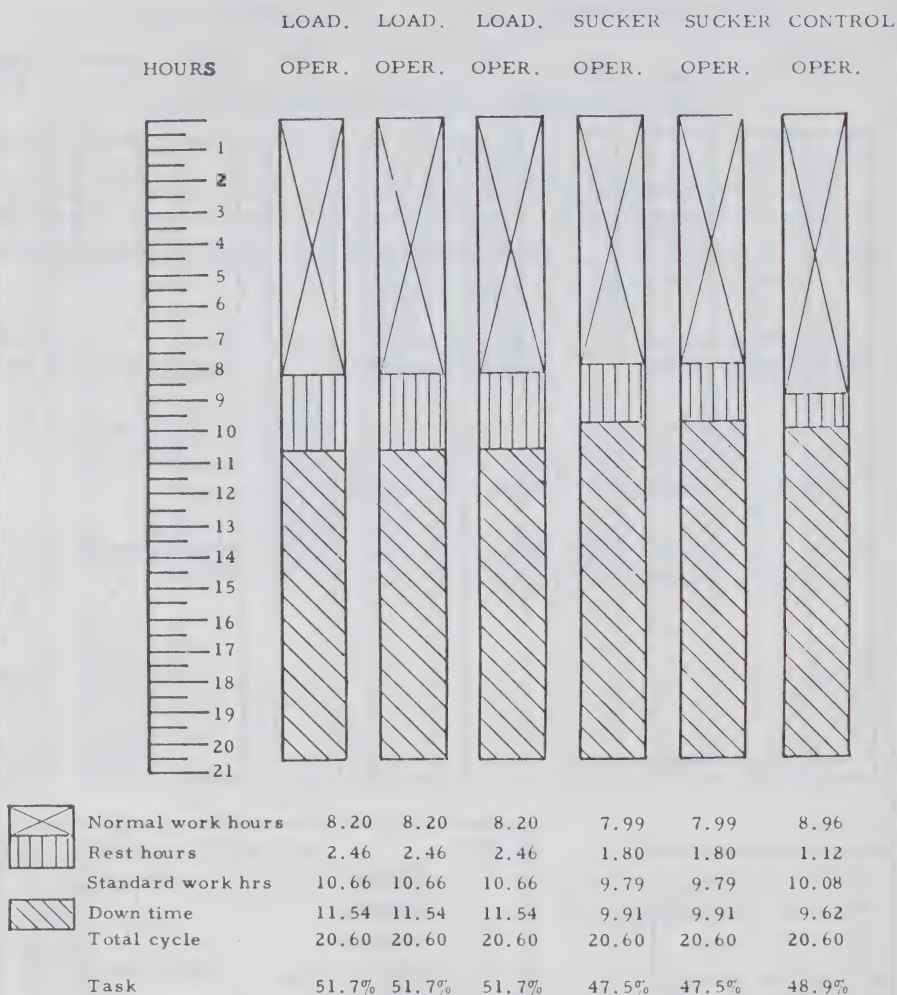


## SYNCHRONIZED TIME CHART

Typical vessel with 6 holds - Elevator No. 5

Unloading by means of front-end loader - 150,000 bushels per hold

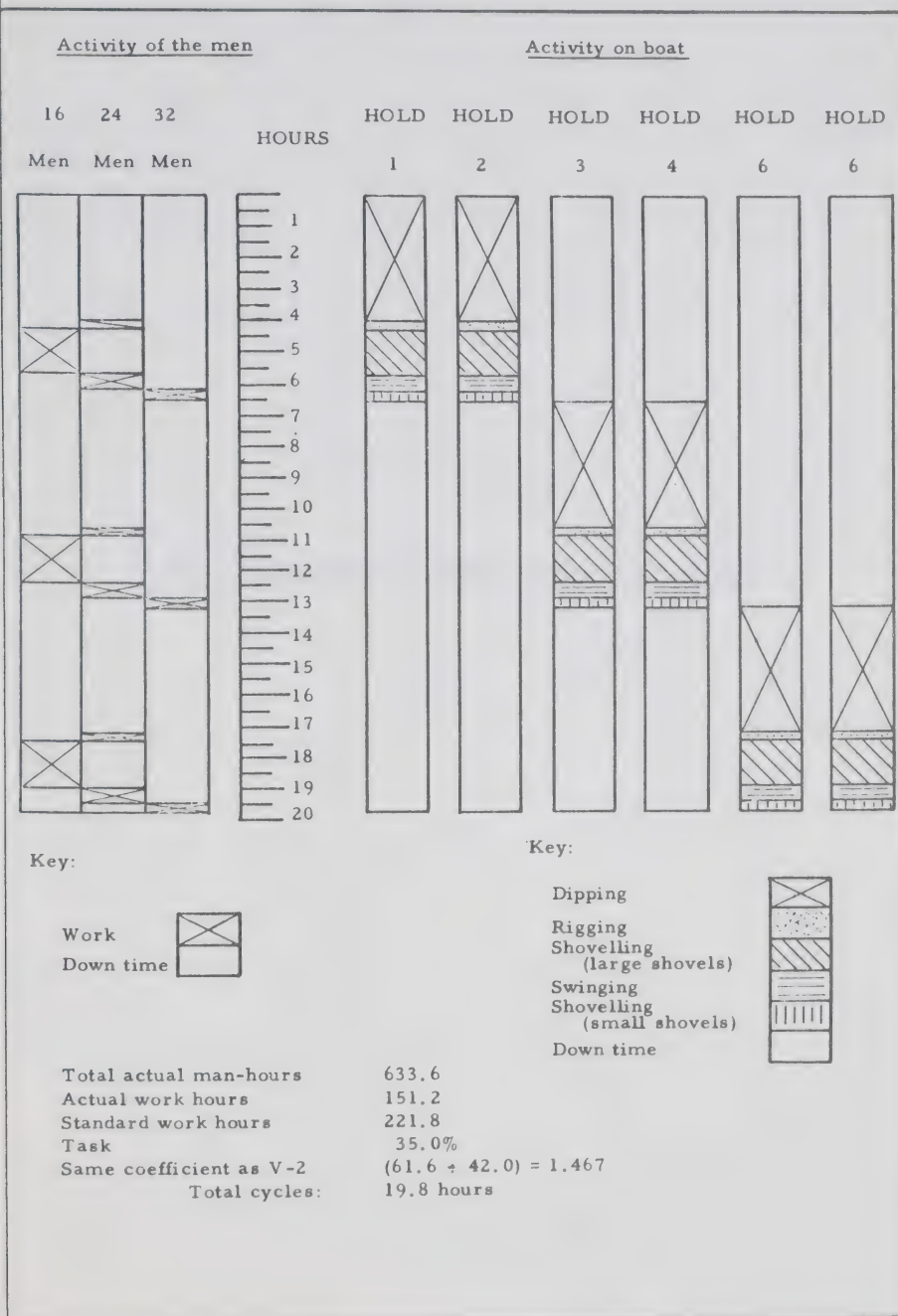
Two marine legs in operation



SYNCHRONIZED TIME CHART

Typical vessel with 6 holds - Elevator No. 5

Unloading by means of power shovels 150,000 bushels per unloading operation  
Two marine legs in operation.





VI - ANALYSIS OF EFFICIENCY AND COST





## VI. ANALYSIS OF EFFICIENCY

In Table IV-4, we used the basic figures of Table IV-3 to calculate the normal cycle of unloading a typical 150,000 bushel-hold at Elevators No. 4 and 5, which have identical equipment. We made these calculations for the two methods of unloading: A) Using front-end loaders, and B) Using power shovels.

The length of the cycle for method A was 7.03 hrs., and 6.61 hours for method B.

According to our studies, the efficiency of using the marine leg for unloading is the same for both methods for the first 112,500 bushels, i.e. 75% of the unloading operation. For the remaining 25% of the unloading, the rate of unloading using front-end loaders is 12,669 bushels an hour or 2.96 hours, in comparison with 14,766 bushels per hour or 2.54 hours using power shovels.

<u>OPERATION</u>	<u>PORTION</u>	<u>BUSHEL</u>	<u>BUSHEL</u> <u>AN HOUR</u>	<u>HOURS</u>
<u>With front-end loading</u>				
Dipping	( 50%	75,000	27,635	2.71
Cleaning	( 25%	37,500	27,635	1.36
	( 25%	37,500	12,669	<u>2.96</u>
				7.03
<u>With power shovels</u>				
Dipping	75%	112,500	27,635	4.07
Cleaning	25%	37,500	14,766	<u>2.54</u>
				6.61

At this stage, namely after an opening, the method using front-end loaders is longer by 0.42 hours or 6.4%

## Appendix I

On the other hand, this differential is reduced over the whole unloading operation because the pneumatic system used in the front-end loader method enables the marine leg to be moved into the next hold before the end of the cycle.

Table VI-1 shows that the total duration of the unloading cycle using front-end loaders is 20.6 hours, as compared with the 19.8 hours shown in Table VI-2 for the power shovel method when two marine legs are in operation. The first method is thus longer by 0.8 hours in all, i.e. 4.0%.

The differential is further reduced when only one marine leg is in operation. The total duration of the unloading operation using front-end loaders as shown in Table VI-3 is 40.0 hours, as compared with 39.6 hours for the power shovel method as shown in Table VI-4. In this case, the first method is longer by 0.4 hours or only 1.0%.

### COST ANALYSIS

If we take as a basis for comparison the total man-hours for the typical unloading operations given in Tables VI-1-2-3-4, using one or two marine legs, the cost of these loading operations would be as follows:

<u>Unloading by means of front-end loaders</u>	<u>1 leg T. VI-3</u>	<u>2 legs T. VI-1</u>
Duration of unloading in hours	40.0	20.6
Number of men	6	6
Man-hours (sub-total)	240.0	123.6
* Cost of front-end loader in man-hours	160.0	164.8
Total man-hours	400.0	288.4

\* The cost of hiring front-end loaders of the type used at the grain elevators of Montreal Harbour is between twelve and fifteen dollars an hour including the operator, according to our information.

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If we assume an average cost of \$13.50 an hour less \$2.70 for the operator, the net cost would be \$10.80 an hour, or the equivalent of:

$$\begin{aligned} 1 \text{ leg} & - (10.80 \div 2.70) \times 40 = 160.0 \text{ man-hours} \\ 2 \text{ legs} & - (21.60 \div 2.70) \times 20.6 = 164.8 \text{ man-hours.} \end{aligned}$$

	1 leg	2 legs
<u>Unloading with power shovels</u>	<u>T. VI-4</u>	<u>T. VI-2</u>
Duration of unloading in hours	39.6	19.8
Number of men (16 men per leg)	16	32
Total man-hours	633.6	633.6

The front-end loader method, when only one marine leg is used, would thus require 233.6 man-hours less than the power shovel method for a typical hold of 150,000 bushels, i.e. 37% less. When two marine legs are used 354.2 man-hours less are used in the case of the front-end loader, i.e. 54% less.

The utilization of manpower is another factor relevant to the net calculation of the efficiency of operations.

If the free time of the workers were fully used in the two methods of unloading mentioned, the standard man-hours for unloading would be as follows when one or two marine legs are used:-

- a) Unloading with front-end loaders 61.6 standard man-hours
- b) Unloading with power shovels 221.8 standard man-hours.

The saving in manpower achieved through the use of front-end loaders is thus 160.2 hours or 72%.

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The real manpower saving lies between these two extremes:

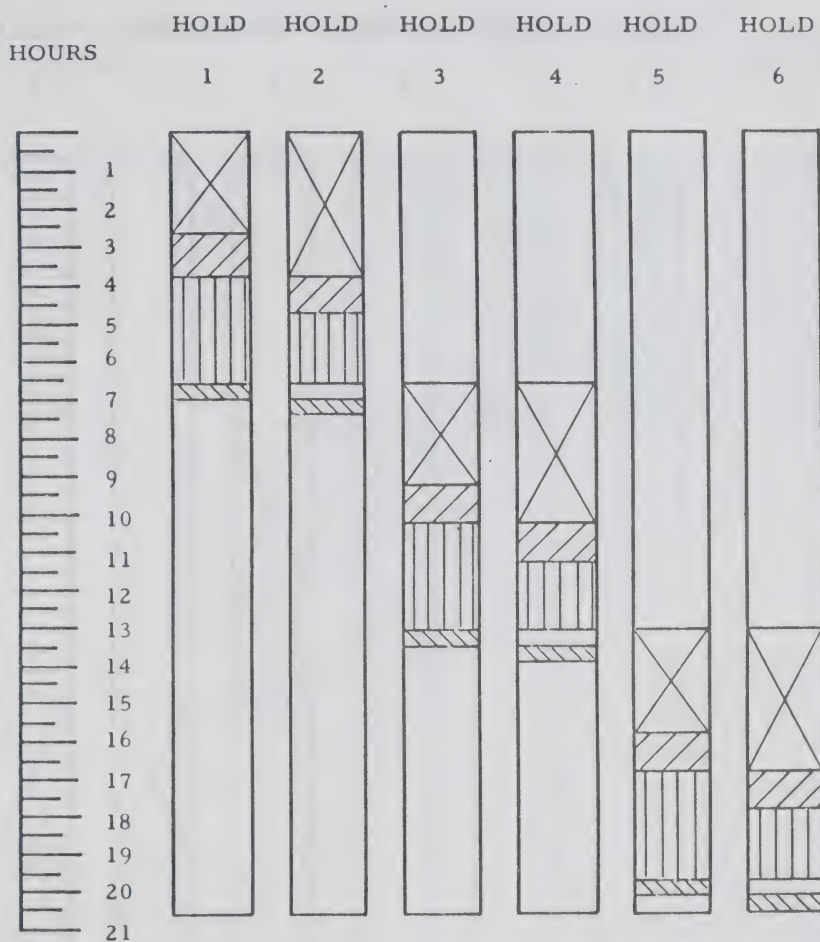
	<u>Man-hours</u>	
	<u>1 LEG</u>	<u>2 LEGS</u>
Minimum utilization of free time	233.6	354.2
Maximum utilization of free time	160.2	160.2

It should be noted that these two extremes are not in fact practical and cannot even be achieved in all cases. The possible and practical situation lies somewhere between the two.

SYNCHRONIZED TIME CHART

Typical vessel with 6 holds - Elevator No. 5

Unloading by means of front-end loader 150,000 bushels  
per hold - Two marine legs in operation.



Key:

Dipping  
Clearing  
Cleaning  
Final clean-up  
Down time

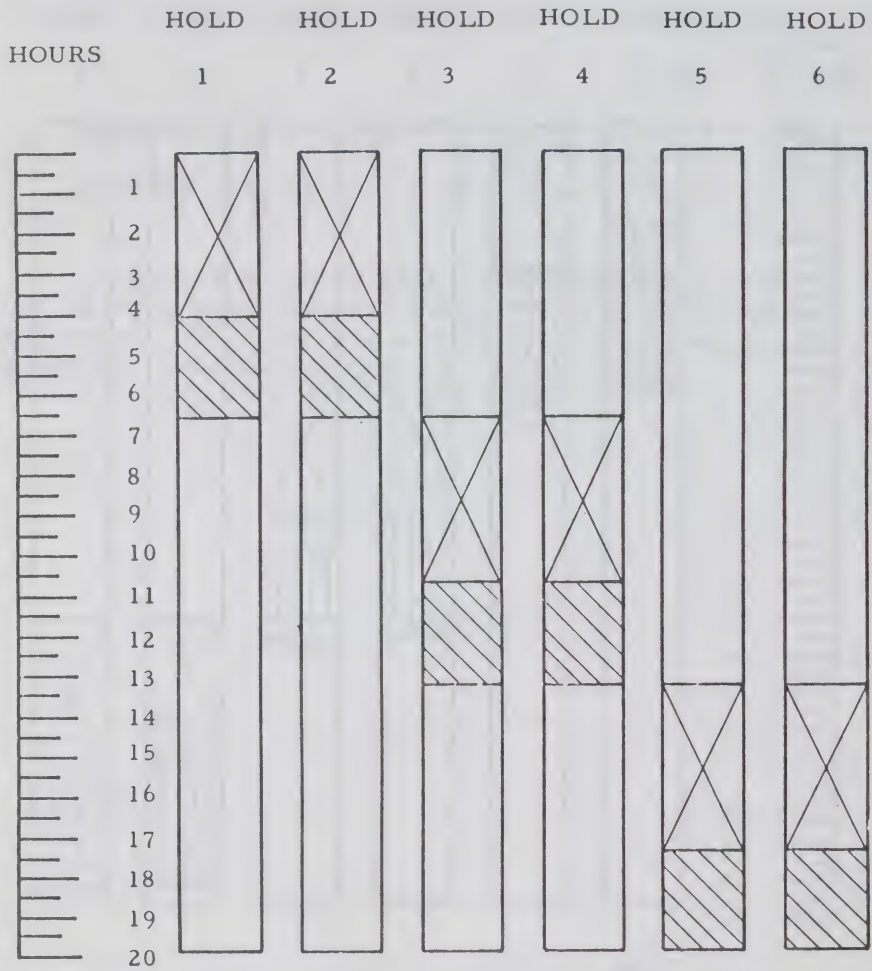


Total cycle: 20.6 hours



SYNCHRONIZED TIME CHART

Typical vessel with 6 holds - Elevator No. 5

Unloading by means of front-end loader 150,000 bushels per hold  
Two marine in operation

Key:

Dipping

Cleaning

Down time

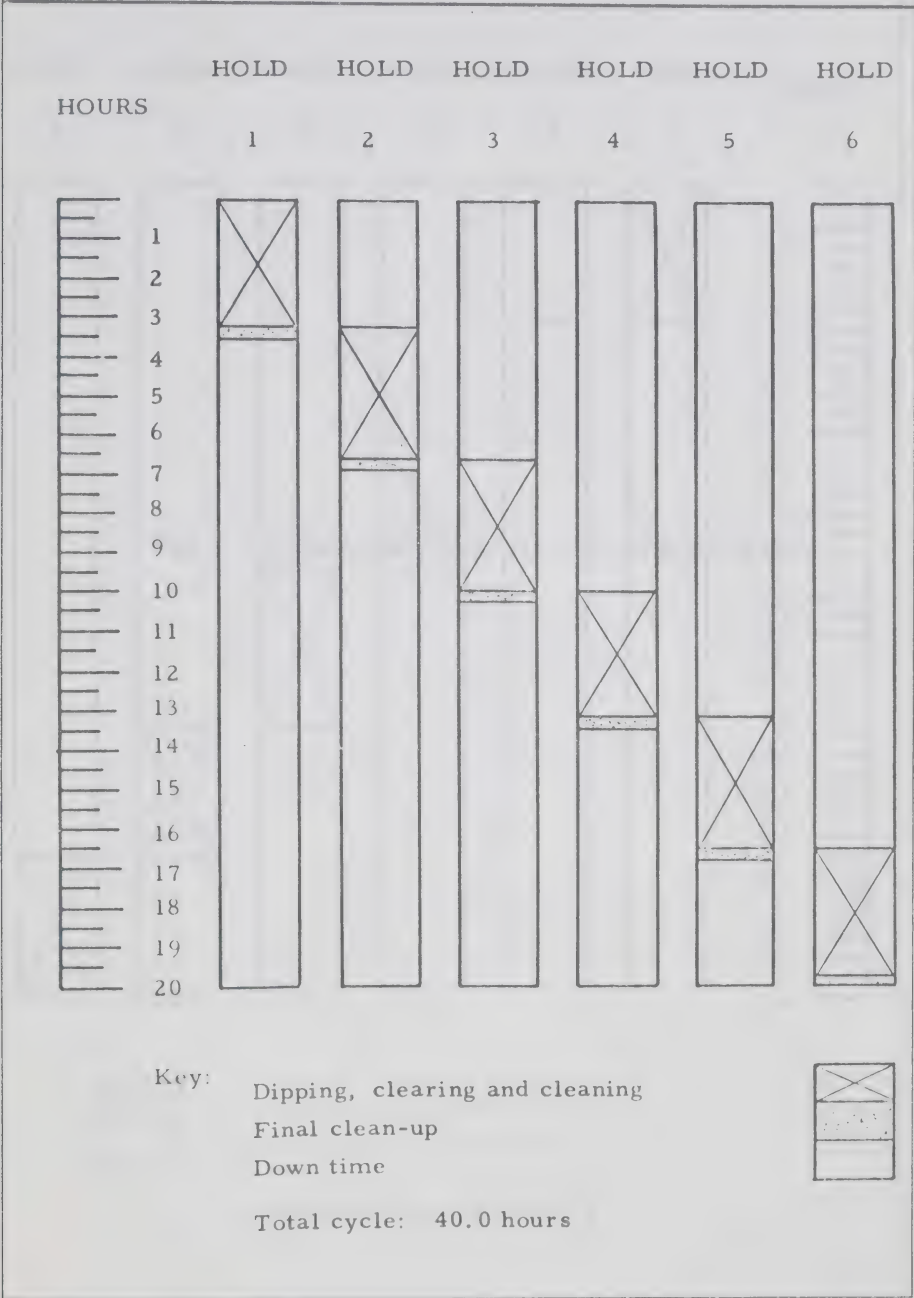


Total cycle: 19.8 hours



SYNCHRONIZED TIME CHART

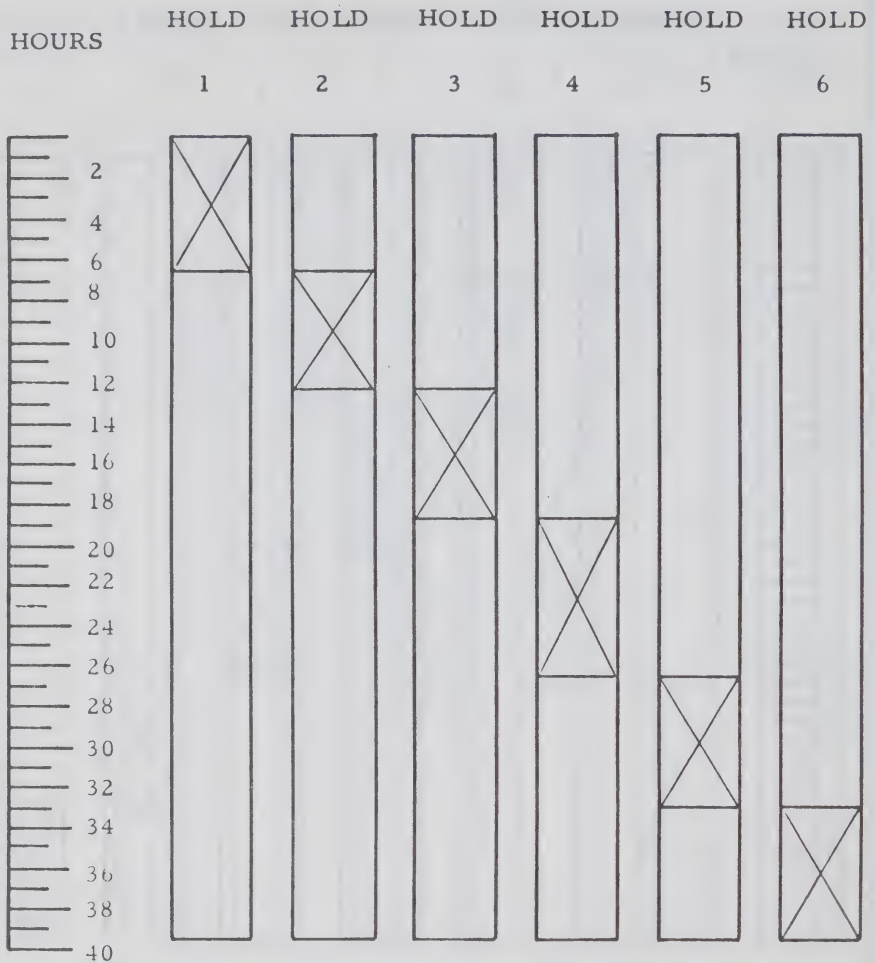
Typical vessel with 6 holds - Elevator No. 5  
Unloading by means of front-end loader 150,000 bushels per hold  
One marine leg in operation.



SYNCHRONIZED TIME CHART

Typical vessel with 6 holds - Elevator No. 5

Unloading by means of power shovels 150,000 bushels per hold. One marine leg in operation.



Key:

Unloading  
Down time



Total cycle: 39 .6 hours

VII - GENERAL REMARKS AND RECOMMENDATIONS



VII. GENERAL REMARKS

The operation of unloading grain ships consists of transporting grain from the hold of the ship to the elevator by means of marine legs and pneumatic suckers.

The critical factor in such an operation is the capacity of the marine leg.

(The sucker discharging in the marine leg can only be used as a supplement when the marine leg is not used to full capacity).

In addition to the use of equipment to full capacity, a sufficient number of workers must be employed to insure proper utilization of the said equipment; care must also be taken to organize this manpower in such a way that no one has too heavy a work load.

The method of unloading using front-end loaders very largely fulfills the above conditions.

In order to demonstrate this, we shall now describe the operational sequence for a typical cycle, i.e. for the unloading of a compartment with three openings.

- A. At the beginning of the operation, the marine leg is dipped into hold 1 where it transports its full capacity of grain until it touches the bottom of the hold.
- B. The marine leg is then withdrawn and placed in opening no. 2 where it operates once more at full capacity until touching the bottom of the hold.
- C. At this stage, the front-end loader has already been put into service since the nozzle men have completed the clearing operation and the front-end loader brought down into the hold. It should be noted that this clearing carried out by the nozzle men, as well as the lowering of the front-end loader, are operations which are short enough to be completed before the marine leg has finished its second dipping operation.

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- D. Since the front-end loader is in position before the marine leg has completed the previous dipping operation, it is used to push the grain towards the marine leg in the second dipping position.
  - E. The marine leg is then dipped for the third time.
  - F.F'. At the same time, the front-end loader continues to go around the marine leg supplying it with grain. It is only at this stage that the leg operates at reduced capacity, since for a short period of time supply depends only on the front-end loader.
- After this, the leg is withdrawn and placed in opening number one of the next hold, thus completing its cycle.
- G. The nozzle men then perform the final clean-up.

This description of the sequence of operations for a complete cycle shows that the use of the necessary equipment, i.e. the marine leg, is coordinated in an intelligent manner for all practical purposes.

Section IV of this report shows that none of the tasks imposes a heavy work load on the manpower.

It has thus been satisfactorily established that the operation is efficient and that the workers are employed in such a way as not to impede the functioning of the equipment, nor to impose too heavy a work load on the employees concerned.



## VII. RECOMMENDATIONS

In view of the foregoing, it seems quite clear that a thorough study of the operation would suggest many minor and even major changes which could be made to improve the operation.

For example, when dipping operations 1 and 2 are complete, or are on the point of being completed, the supply of grain to the marine leg is somewhat reduced; at this stage the sucker could be brought into play in order to increase the volume of grain unloaded and thus to enable the next dipping operation to commence earlier. However, it must also be taken into consideration that a sucker nozzle can only handle some two to three thousand bushels an hour, which would be equivalent to a saving of three minutes of marine leg operation for each hour the sucker is in service. The operational cost of this would be exorbitant, quite apart from the additional manpower (2 men) required to produce such a small increase in efficiency.

On the other hand, if the total volume in Montreal harbor was such that ship turnaround were the critical factor, consideration could be given to the installation of a third marine leg, the latter could perform the dipping operations whilst the other two would do the cleaning and final clean-up.

The above possibility would require detailed study of the overall economic aspect of the total volume of grain unloaded in the port, the cost of installing such equipment, the layout of existing elevators and their capacity: loading capacity would also have to be taken into consideration in order to make space available for unloading by means of three marine legs.

It is thus clear that much more detailed studies than the present one would have to be undertaken and that detailed and specific recommendations would have to be made with a view to making a considerable increase in the efficiency of the operation.

## Appendix I

In closing, the writer feels that he must say a few words about the human factor which is one of the most important factors for the industrial engineer.

Work study can be used to determine work methods and the time required for performing the work, to establish work schedules and to supervise the performance of the work by means of periodical reports. All this, however, can only be applied if the workers feel that they are participating in an economic development which is favourable to them, and if they can at the same time be assured of the security of employment which they seek.

The following quotation bears out the above remarks:

### "RESISTANCE TO CHANGE"

"If industry, government, unions and everyone else involved established a mechanism through which a worker displaced by a machine would be assured another job of equal worth and security, resistance to production changes would evaporate, for it is not the old methods that the workers want to preserve, but the old security. In the absence of such guarantees, the conflict will be with us.

"MEN AND MACHINES"

"

A story about Longshoring on the West Coast Waterfront.

Joint

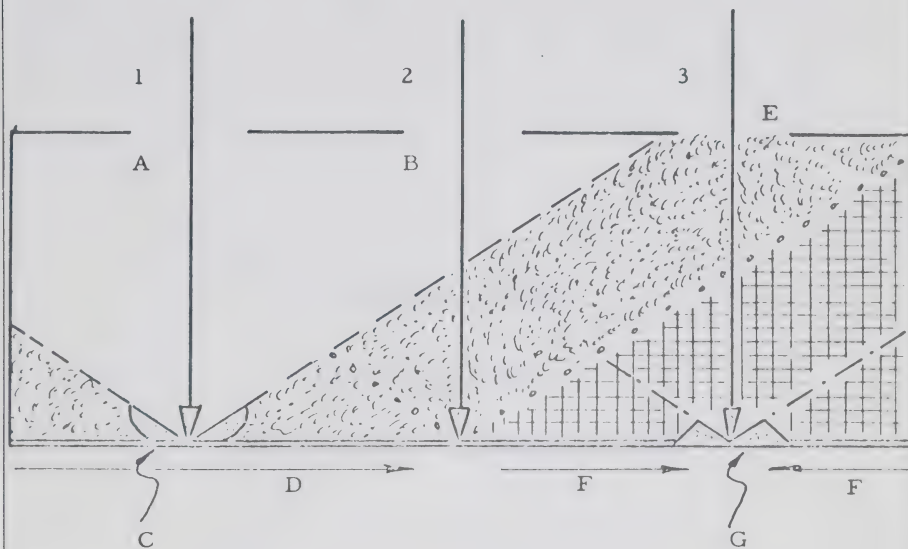
edition: Pacific Maritime Association  
International Longshoremen's  
& Warehousemen's Union.

Report submitted in Montreal, December 13, 1966.

(Signed)

Pierre N. Dufresne, Engineer.

TYPICAL LONGITUDINAL SECTION  
OF A HOLD



Key:

Dipping Operation No. 1  
Dipping Operation No. 2  
Dipping Operation No. 3  
Sucker





VIII - EXHIBIT

BRIEF SUBMITTED BY

THE NATIONAL HARBOURS BOARD





October 11, 1966.

GRAIN UNLOADING METHODS IN MONTREAL HARBOUR

Three distinctly different methods are used in the Montreal grain elevators to unload grain from ships. The different unloading methods are characterized by the auxiliary equipment employed for that particular type of unloading operation. According to the auxiliary equipment used the three different types of unloading operations are:

1. Power shovel assisted unloading,
2. Pneumatics assisted unloading and
3. Front-end loader assisted unloading.

(A) History

The different unloading methods have been practiced in Montreal as follows:

- |             |             |   |
|-------------|-------------|---|
| Elevator 1. | Until 1958: | Power shovels (1)   |
|             | 1958- 1966: | Pneumatics (2)  |
|             | 1966 :      | Front-end loaders (3) and<br>Pneumatics (2), alternatively      |
|             | 1967 :      | Front-end loaders (3)<br>exclusively.                           |
| Elevator 2. | Up to date: | Power shovels (1), no change<br>is contemplated for the future. |
| Elevator 3. | Until 1959: | Power shovels (1)   |
|             | 1959- 1966: | Pneumatics (2)  |
|             | 1966 :      | Front-end loaders (3) and<br>pneumatics (2)                     |
|             | 1967 :      | Front-end loaders (3)<br>exclusively.                           |
| Elevator 4. | 1963- 1966: | Power shovels (1)   |
|             | 1967 :      | Front-end loaders (3)<br>exclusively.                           |

## Appendix I

Elevator 5.	Until 1959:	Power shovels (1)
	1959- 1963:	Pneumatics (2)
	1963- 1966:	Pneumatics (2) and power shovels (1) in one marine tower only (for melt unloading; the other methods damage a great percentage of the malt).
	1966	: Front-end loaders (3) and pneumatics (2) alternately, power shovel (1) in one marine tower has been retained.
	1967	: Front-end loaders (3) exclusively, except Power shovels (1) in one marine tower for malt only.

### (B) Description of Unloading Operations

Regardless of the method used, all types of ship unloading operations can be divided into two major operational phases. The first phase is called "dipping" and it is common to all types of unloading operations.

A bucket elevator, called marine leg, is lowered by winches into the ship's hold through the hatches and the free flowing grain is elevated to the chute leading to the marine tower and ultimately to the Elevator Building. The marine leg is gradually lowered to the bottom of the ship's hold and about 70 to 75% of the bulk cargo flows to the boot of the leg by gravity and will be lifted by the marine leg. This unloading phase, characterized by gravity flow of the grain to the marine leg is commonly referred to as "dipping".

The marine leg hoisting, lowering as well as its outreach are controlled by the marine tower operator sitting in a control booth on the side of the tower, overlooking the ship. The only other man needed for this phase of operation is the foreman (or subforeman) on the ship's deck, to direct the marine tower operator when the boot of the leg is obstructed from his view, and to control the sequence of the dipping. In special cases, more men are needed during the dip, as described later in detail.

When the marine leg removed all grain that flows to the boot of the leg by gravity, auxiliary equipment is required to move the remaining grain to the leg, or to remove the same grain by some other means. This second phase of unloading - regardless of the auxiliary equipment used - is called the clean-up. The clean-up operations are differing from each other and will be explained separately:

- (1) Power Shovel Assisted Unloading  
(As practised in Elevators 2, 4 & 5)
- (a) Unloading Crew

The size of the unloading crew depends on the number of marine towers used to unload that particular ship. The crew consists of:

	Number of men per tower in		
	<u>Elev. 2</u>	<u>Elev. 4</u>	<u>Elev. 5</u>
Subforeman	1	1	1
Shovel operator	3	4	4
Shoveller	9	12	12
Total:			
if 1 tower is used:	13	17	17
if 2 towers are used:	-	34	-
if 3 towers are used:	-	51	-

The working day of the unloading crew starts at 8:00 A.M.; whether or not there is a ship to unload. If there is no ship to unload, the crews are gainfully employed in the elevators for house keeping jobs. (Cleaning) If a ship is at the elevator to unload, then the unloading crew is transferred from the housekeeping duty to the ship. If the transfer is effected during the day (and not at 8:00 A.M. or 1 P.M.), then the unloading crew will be given 1 hour paid rest before starting on the ship.

Since the standard day ends at 5:00 P.M., all time worked after 5:00 P.M. is overtime (time and a half). All Saturday work is time and a half and all Sunday work is double time.

## Appendix I

### (b) Dipping

Two different dipping methods are used: The ship might be dipped throughout (usually 6 holds at 3 hatches) before any clean-up is done, or each hold may be dipped separately and cleaned up right after the dip. The former method is commonly used if the ship's cargo is uniform and the second method is employed if the ship carries different grains in the different holds. The two methods are employed about 50-50% of the cases.

Whether one, two or three marine towers will be used on the ship, depends on the room available inside the elevator and will be decided by the elevator management. The sequence of the dip depends on the ship's mate and will be agreed upon with the unloading foreman in charge.

After the hatch covers are removed by the ship's crew, the marine tower will be directed by the subforeman to the required hatch and the dip begins. The subforeman also decides when to move the marine leg to the next hatch and when to stop the dip.

As mentioned before, the marine tower and marine leg is operated by the tower operator alone, as directed by the subforeman. However, because of mechanical shortcomings, at Elevators 2 and 4, extra men are present during the dip. Their duty is to occasionally take up the slack power shovel cables and ropes. The slack cables and ropes develop because of the movement of the marine leg. No automatic take up device is in operation yet. The slack cables and ropes are taken up by remote control. The portable push button pendants are on the deck of the ship and are operated by the mentioned extra men. The slacks are taken up about every 5 minutes.

The number of subforemen and shovel operators required during the dip is shown in the table below. Please note that the marine tower operator is not a member of the unloading crew, therefore, he is not shown in this table.



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<u>Classification</u>	<u>Men per tower</u>		
	<u>Elev. 2</u>	<u>Elev. 4</u>	<u>Elev. 5</u>
Subforeman	1	1	1
Shovel operator	3	4	4
Total for 1 tower	4	5	5
Total for 2 towers	-	10	-
Total for 3 towers	-	15	-

The shovellers who make up the rest of the unloading crew are gainfully occupied in the elevator while the dipping is going on. Before they are called to clean-up duty, they will get one hour paid rest.

The Union contract stipulates that the shovellers may be gainfully occupied in the House while the dip is in progress, no matter which dipping method (throughout or hold by hold) is used. However, in practice, the shovellers work in the house only if the ship is dipped throughout before the clean-up, but they are not re-called to house duty between clean-ups if the hold by hold dipping method is used. Nor do the shovellers do any house work during night or during the weekend. (overtime)

The time of the dip compared to the total unloading time varies with the size of the ship. As an average, the dip takes 60% of the total unloading time, leaving 40% for the clean-up.

### (c) Clean-up

When the dip is completed, the subforeman and four (or 3 at Elevator 2) shovel operators are already on the ship. The 12 (respectively 9 in Elevator 2) shovellers go on board and rig up the power shovels (about 5 to 10 minutes). The power shovels are winch operated scoops pulling the grain toward the marine leg.

Drag lines go out from the marine tower to the marine leg, down to the boot of the leg and from there to a tail block fastened to the ship's bulkhead. The shovel is tied to this drag line which pulls it back and forth between the marine leg and bulkhead. The

## Appendix I

rigging operation is nothing else but arranging the drag lines, tying the shovel to the line and placing the tail block to the ship's bulkhead.

The movements of the shovels are controlled remotely by push buttons. The push buttons are located in a pendant which can be carried to any position on the ship's deck to provide good visibility for the push button operators. (Shovel operators). There are 4 shovels used simultaneously; consequently 4 shovel operators are needed at all times, but after the shovels are rigged up and start operating, only 2 or maximum 4 shovellers stay in the hold. These men are moving the tail pulleys of the drag lines when the shovel finished that particular path, and help if and when a shovel overturns and has to be straightened. This phase of shovelling operation (with 4 shovel operators and 2 to 4 shovellers) goes on until all tail pulley positions have been utilized. It has to be noted, that there are only a limited number of rings on the side of the ship's hold and on the bulkhead, consequently the shovel will leave some grain ridges between the two neighbouring paths. To remove these ridges, a shoveller moves the shovels by hand sideways at the bulkhead end of the strake to bite into the ridges. The term for this operation is "to swing the shovels". Naturally at this shovelling phase more men are needed in the hold. Usually 4 to 8 men are sent down.

If and when the bottom of the hold becomes relatively clean and only shallow grain is surrounding the boot of the leg, the big power shovels are no more effective, due to the fact that the marine leg buckets never get closer to the bottom of the hold than 12 to 18 inches, they cannot pick up the grain from the floor; the grain must be shovelled in to the marine leg buckets. For this purpose, we use smaller size magnesium shovels or scoops which are pulled forward to the leg by the drag line, but a shoveller has to stand behind them to lead them, as well as to pull them back to start a new stroke.

To change the big shovels to small ones, more shovellers descend to the hold and after the re-rigging they take turns in this semi-mechanical shovelling operation. Usually all shovellers (12 men) are in the hold during this phase which lasts approximately 20 to 25 minutes. In spite of the flexibility of the smaller



semi-mechanical shovels, about 25 bushels of grain is left on the floor after this operation. This last few bushels will be shovelled into the leg by hand, in about 10 minutes. Please note that the sweeping up of the bottom of the hold is done by the ship's crew.

There are some older ships on the lakes which have side ballast tanks. The top of the side ballast tanks from a ledge inside the hold, where grain may remain. These ledges are called "tablets" in Montreal and will be swept clean by the shovellers, usually during the dip. 4 shovellers are called from the house to do this work that lasts about 1/2 hour.

The last duty of the unloading crew (1 subforeman, 4 shovel operators and 12 shovellers per marine tower) is to take out the shovels from the hold, store them in and around the marine tower, or to rig them up for the next hold.

To give an example, the time needed for above operations in a hold containing 150,000 bushels of wheat is tabulated here:

1. Rigging of shovels	10 to 15 minutes
2. Shovelling by large shovels	120 to 140 minutes
3. Changing to small shovels )	25 to 30 minutes
4. Shovelling by small shovels )	
5. Hand shovelling	5 to 10 minutes
6. Taking down the shovels	<u>10 to 15 minutes.</u>

Total: 2h.50' to 3h.30'

- (2) Pneumatics Assisted Unloading ~  
(As practised in Elevators 1, 3 and 5)

- (a) Unloading Crew

The "sucker" unloading crews are made up of the following men:

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<u>Classification</u>	<u>Number of men per tower in</u>		
	<u>Elev. 1</u>	<u>Elev. 3</u>	<u>Elev. 5</u>
Subforeman	1	1	1
Pipeman	2	2	2
Nozzleman	8	8	9
If one tower is used	11	11	12
If two towers are used	22	22	24

The working conditions and status of the "sucker" (pneumatic) crews are the same as that of the "shovelling" crews, described at (B), 1(a).

### (b) Dipping and clean-up

The dipping period of the pneumatics assisted unloading operation is relatively short because the pneumatic clean-up equipment starts working before the entire hold is dipped. Usually the marine leg is in the second or third hatch when the sucker pipes are lowered to the first hatch to clean-up the grain that was left in this area after the dip. Taking a hold containing 150,000 BU of wheat as an example, the dip lasts approximately 3 hours; before the pneumatics are applied. The dipping method whereby the entire ship is dipped before the clean-up, is not used in the pneumatics assisted unloading operations.

The second phase of the pneumatics assisted unloading operation starts when the sucker pipes are lowered to the hold for the clean-up. In the second phase, dipping continues working but pneumatic clean-up starts also in the first hatch. As the dipping advances hatch by hatch, the pneumatic clean-up is also advanced, but there is a time lag between the two operations. At the end, when dip is finished in the last hatch and the marine leg will be retracted, the suckers clean-up all the grain left in the hold. This is the third and last phase of the unloading operation.

During the second phase, the marine leg is dipping and the suckers are cleaning up the same hold. Obviously, the grain lifted by the two parallel and simultaneous operations cannot exceed the total capacity of the receiving system.

During the first phase, which is the clean dipping, only the marine tower operators (one per tower) and the subforeman (one per tower) are needed. The pipe men and the nozzle men are still gainfully occupied in the elevator. Before they are called to unload the ship, one hour paid rest period is granted to them, except when the clean-up operation starts at 8.00 A.M., 1.00 P.M. or 7.00 P.M. In such cases, the 1 hour rest period is the lunch or supper recess.

Although the dip in the second or further holds may last several hours before the suckers are used, the unloading crew stays on the ship; which means that the pneumatic unloading crew does no housekeeping work in the elevator between dips.

The second phase of the pneumatics assisted unloading operation when the dipping and clean-up become parallel operations lasts about 3 1/2 to 4 hours in Elevator 5 and about 5 to 5 1/4 hours in Elevators 1 and 3. Please note that the time difference between Elevators 1, 3 and 5 is caused by the different capacities of the marine towers (max. 27,000 BU/HR in Elevators 1 and 3 and max. 36,000 BU/HR in Elevator 5).

The third and last phase of the pneumatics assisted unloading operation is the final clean-up. After the marine leg finished the dip at the last hatch, only the suckers remain in the hold to pick up all grain that has been left by the marine leg.

The pneumatic equipment used in the second and third phases of unloading operation consists of two sucker units per marine tower. Each sucker unit has two sucker nozzles which are attached to the end of two flexible pipes. The flexible pipes hang down to the hold from a common larger pipe, which can be hoisted, lowered and moved around by winches. The controls of the hoisting and slueing winches are located in a portable pendant push button station, which are operated by the "pipe men" on the ship's deck.

There are four sucker nozzles at each marine tower. The duty of the pipe man is to lower, hoist or move the nozzles to the required location in the hold, whereas the duty of the nozzle men is to move the nozzles in the grain in such a manner that the maximum amount of grain

## Appendix I

should flow to them. Each nozzle is moved around by two nozzle men. Thus one pipe man and 8 nozzle men are required per marine tower for the sucker operation. However, because of the heavier equipment used in Elevator 5, one extra nozzle man is added to the crew of both towers. (1 pipeman + 9 nozzle men per tower).

During the entire clean-up operation, the tower operator, pipe man and the nozzle men are directed by the subforeman. The subforeman is also responsible for the sequence of the operation, which has to be agreed upon by the ship's mate and the elevator management.

When the clean-up is completed, the nozzle men attach the sucker pipes and nozzles to a winch line by which the pipe man lifts them out from the hold for the next operation.

The following table shows the approximate time required to unload a hold containing 150,000 BU of wheat.

	Elevators <u>1 and 3</u>	Elevator <u>5</u>
1. Dipping (1st hatch only)	180 to 190 min.	160 to 170 min.
2. Parallel dip and clean-up	310 to 320 min.	225 to 240 min.
3. Final clean-up (leg out)	<u>80 to 90 min.</u>	<u>65 to 70 min.</u>
Total:	9½ to 10 hours	7½ to 8 hours

Please note that the idle time while moving the marine tower and to position the equipment is included in above time figures.

(3) Front-End Loader Assisted Unloading  
(As practised at Elevators 1, 3 and 5)

(a) Unloading crew

The front-end loader (or bull for short) assisted unloading crews consist of:



# Appendix I

	Number of men per <u>ELEVATOR</u>		
	<u>Elev. 1</u>	<u>Elev. 3</u>	<u>Elev. 5</u>
Foreman salaried em- ployee	1	1	1
Bull drivers	3	3	3
Nozzle men	2	2	2
Pipe man	<u>1</u>	<u>1</u>	<u>1</u>
Total per <u>Elevator</u>	7	7	7

Please note that Elevator 4 will be also converted to front-end loader assisted unloading by 1967 and the probable crew for Elevator 4 will be made up of:

Foreman salaried em- ployee	<u>1</u>
Bull drivers	3
Bull hoist operator (pipe man)	1
Utility man (nozzle men)	<u>2</u>
Total of hourly wage employees:	6

The omission of pipe man and nozzle men will be brought about by further modernization of the equipment. No flexible suction pipes and portable sucker nozzles will be used in Elevator 4. The final clean-up will be done by fixed nozzles; attached to the marine leg. Mechanical, motor driver, sweepers will be used to move the residue grain to the fixed nozzles. The bull operators will also drive the sweepers.

However, the new system in Elevator 4 is not operational yet; therefore we confine our descriptions to the already operating system at Elevators 1, 3 and 5.

The bull assisted unloading crews day starts at 8.00 A.M. If no ship is at the dock, the crew works in the elevator, the same way as the power shovel crew (B), 1(a). Before calling the crew to unloading duties, one hour paid rest is given to them except if the unloading starts at 5.00 A.M., 1.00 P.M., or 7.00 P.M.

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(which is after lunch or supper hour). Any work after 5.00 P.M. or weekends is overtime as stipulated by the Union Contract.

### (b) Dipping and "Clearing"

The ship is usually not dipped throughout before the clean-up (by bulls) starts. The unloading is usually done hold after hold, cleaning up right after the dip. The operation is similar to that used in the pneumatics assisted unloading method. But no separate crews are assigned to the marine towers. The same crew is doing all the unloading work at both marine towers.

Due to the short duration of the initial dip, the unloading crew is present as soon as the unloading starts; no house jobs are performed by the crew while the dip is going on.

Usually the unloading starts simultaneously by two marine towers dipping in the first hatches of two different holds. Whichever hatch is finished first will be "cleared" first. After the hatch is thoroughly dipped, there is still about 4 to 5 feet of grain left on the floor. This grain is too high to permit the free movement of a bull lowered to the hold. This grain has to be "cleared" away from a spot large enough to start the bull. While this clearing operation is in progress, the marine leg is dipping in the second or even third hatch. By this method the 'leg's capacity is continuously utilized.

The "clearing" is done by one single sucker nozzle (one out of the available four nozzles used in pneumatic unloading). The pipe man manipulates the pendant control box on the deck. He lowers the sucker nozzle to the required spot (directed by the foreman) in the hold, where the two nozzle men are waiting for it. According to the directives received from the foreman, the nozzle men "clear" the room for the bull. This "clearing" operation lasts about 3/4 to 1 hour per hold.

When the "clearing" is completed, the sucker nozzle will be retracted by the pipe man and the nozzle men leave the hold. Right after the "clearing" is done, the pipe man lowers the bull to the hold. Prior to this



operation, one of the bull drivers has already moved the bull to a position where it can be picked up by the bull hoist. The driver also attaches the lifting slings to the bull before the pipe man picks it up by the hoist. The hoist controls (lifting, lowering and slueing) are located in a portable pendant and will be operated by the pipe man (or sometimes by the foreman).

The pipe man picks up the bull and lowers it to the hold. The other drivers and the nozzle men assist out this operation to squeeze the bull through the hatch. The bull driver in the meanwhile descends to the hold, detaches the slings from the bull and starts it up. The pipe man retracts the slings and the tower operator moves the marine leg to the position requested by the foreman. This position is so chosen that the bull can enlarge the working room in the hold by pushing more and more grain to the leg.

From this phase on, the bull is pushing (and lifting) the grain to the marine leg which is moved further and further until even the last hatch is dipped and cleaned-up by the bull. This clean-up operation is directed by the foreman on deck.

As we have mentioned before, the dip of the hold was not completed when the "clearing" operation started and it may not be completed even when the bull operation starts. If so, the marine leg is moved ahead of the bull and it will dip and receive or in from the bull simultaneously. When the dipping and clean-up of the last hatch is finished, the bull will be hoisted out from the hold the same way as it was lowered before. The driver in the hold attaches the slings and the pipe man lifts the bull. The bull will be placed on wharf, from where the driver will take it to the next operation.

Naturally, the bull cannot clean-up the hold completely, but it will leave about 150 to 200 bushels of grain around the marine leg. This residue grain will be removed from the hold by the same single sucker nozzle that was used for the "clearing" operation.

## Appendix I

The pipe man on deck lowers the sucker nozzle to the hold as soon as the bull is out of the way. The nozzle men also descend to the hold to clean-up the residue grain. This final clean-up operation, including the retraction of marine leg and the retraction of the sucker at the end, lasts about 15 to 25 minutes.

It was mentioned before that the normal unloading is done by two marine towers simultaneously. However, there is only one "sucker" crew (1 pipe man + 2 nozzle men) for the two towers, which started at the same time and probably finished the dip in the first hatch also at the same time. The "clearing" operation by the sucker crew starts immediately in one of the dipped hatches while the other marine leg continued dipping in the other hold, hatch by hatch.

Only when the "clearing" operation is finished in the first hold, can the crew move over to the other tower to do the "clearing" at that tower also. Probably an hour or more elapsed since the first hatch was dipped here, but no time was wasted, because the leg continued dipping. Due to the fact that more dipping was done in the second hold before clean-up started, the total clean-up time will be somewhat shorter here.

The clean-up operation by the bull lasts several hours ( $3\frac{1}{2}$  to 4 hours in a 150,000 BU hold), thus the sucker crew can properly rest after "clearing" two holds in a row. The first final clean-up starts usually 2 hours after the second "clearing" operation has been finished.

The ship's holds are different in size; consequently, all following unloading operations are easier, because the coincidences of similar operations are greatly diminished.

In order to provide enough rest for the bull drivers, we employ 3 drivers for 2 bulls, which means that each driver rests  $\frac{1}{3}$  of the bull operation time and more than  $\frac{1}{2}$  of the overall unloading time.

Please note that there is some difference between the optimum unloading time in Elevators 1, 3 and 5. The marine legs of Elevator 5 are larger, consequently the unloading is faster here. This means that the crews in Elevators 1 and 3 have more rest than the crew in Elevator 5, provided the ships are of the same size.

## Appendix I

A typical hold containing 150,000 BU of wheat will be unloaded as shown below:

	<u>Elevator 5</u>	<u>Elevators 1 and 3</u>
	<u>MINUTES</u>	
Dipping 1st hatch	180 to 190	200 to 220
Clearing for bull	60 to 65	90 to 100
Clean-up by bull & dip	195 to 200	200 to 220
Final clean-up(leg out)	15 to 25	20 to 30
Overall time:	7½ to 8 hrs.	8½ to 9½ hrs.

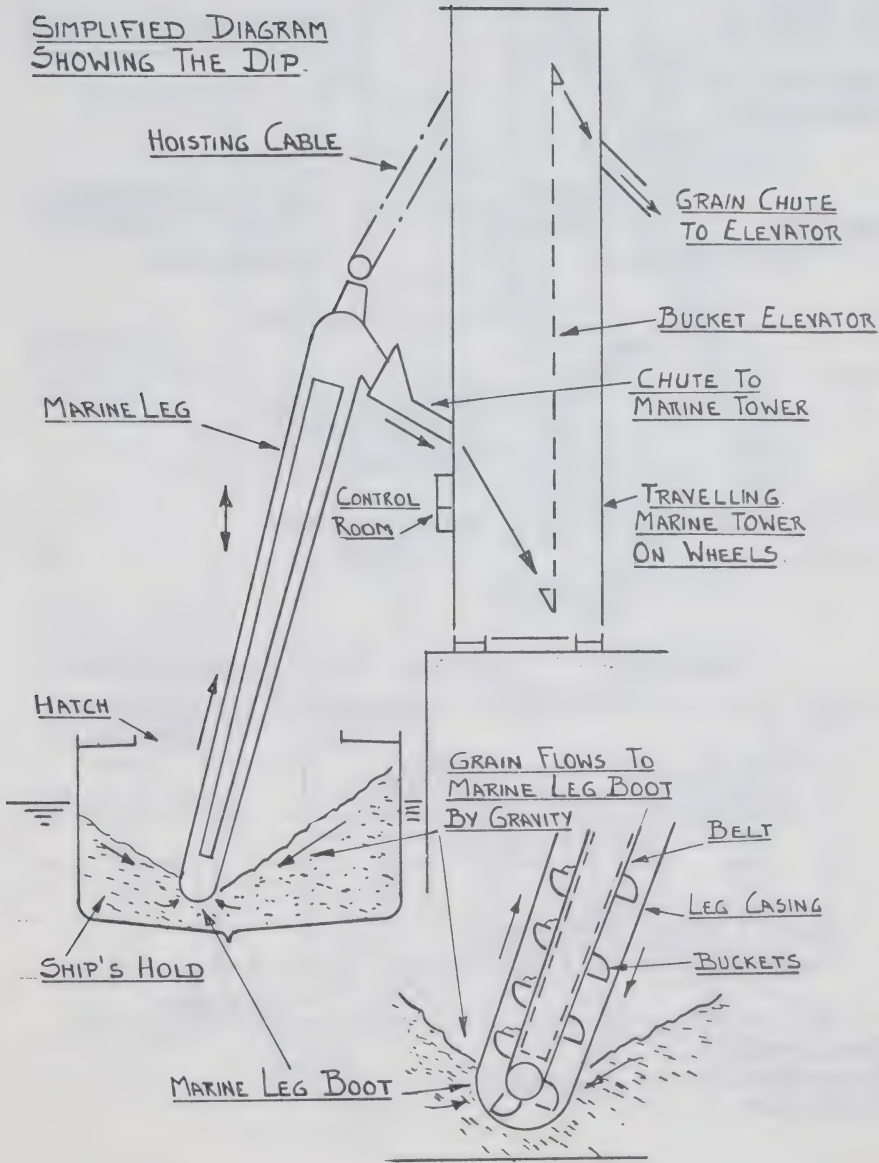
Please note that all idle times are included in above figures.

### Terms used in above report:

<u>Marine tower:</u>	Steel structure on wheels, housing the marine leg. Unloads grain from ship and transfers it to the Elevator. Picture 1.
<u>Marine leg:</u>	Bucket elevator that takes the grain from the ship. Suspended on cables for lowering, lifting and "kicking" out. Picture 1.
<u>Power shovel:</u>	Large scoops moved by winches between the boot of the marine leg and bulkhead. Picture 2, also 3.
<u>Clean-up shovel:</u>	Similar scoop, pulled by winch to leg and by hand backwards. Picture 4.
<u>Pneumatic clean-up pipe:</u>	Suction pipe lowered to the ship's hold by winches. Picture 5.
<u>Sucker pipes, flexible:</u>	Flexible pipes hanging from clean-up pipe; two on each clean-up pipe. Picture 6.

## Appendix I

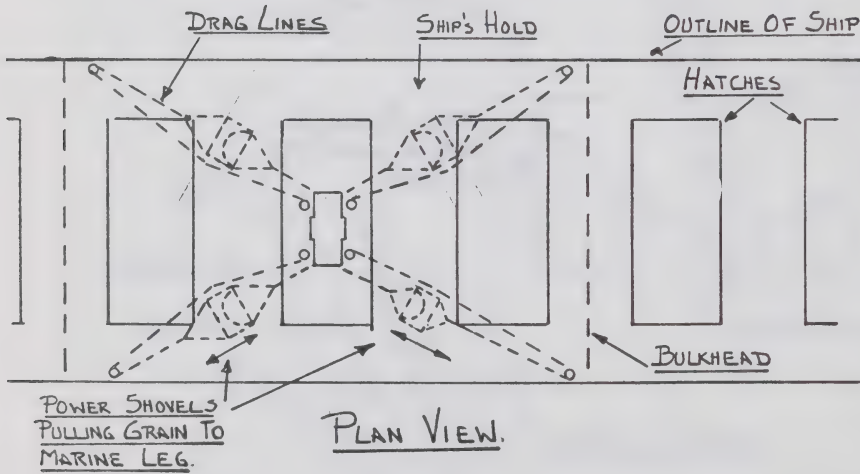
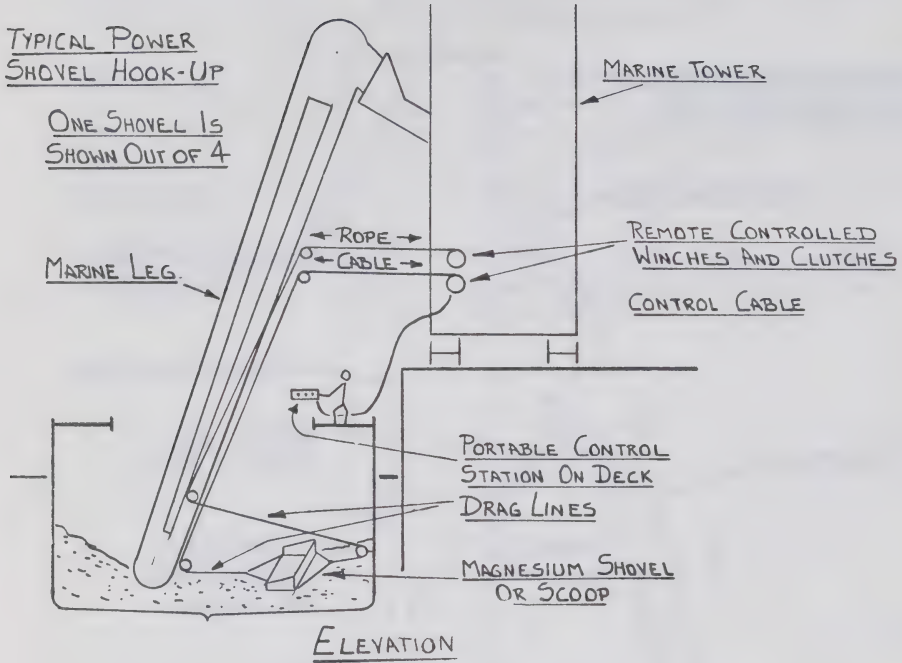
<u>Sucker nozzle:</u>	Head of sucker pipe that picks up grain by suction. Picture 7.
<u>Hold:</u>	One compartment in a grain carrying ship.
<u>Hatch:</u>	An opening on the top of hold, covered by removable cover. 2 to 6 openings per hold.
<u>Bulkhead:</u>	Partition between ship's holds.
<u>Front-end loader or "Bull":</u>	Rubber tired shovel leader as used in construction jobs. Picture 8.





# TYPICAL POWER SHOVEL HOOK-UP

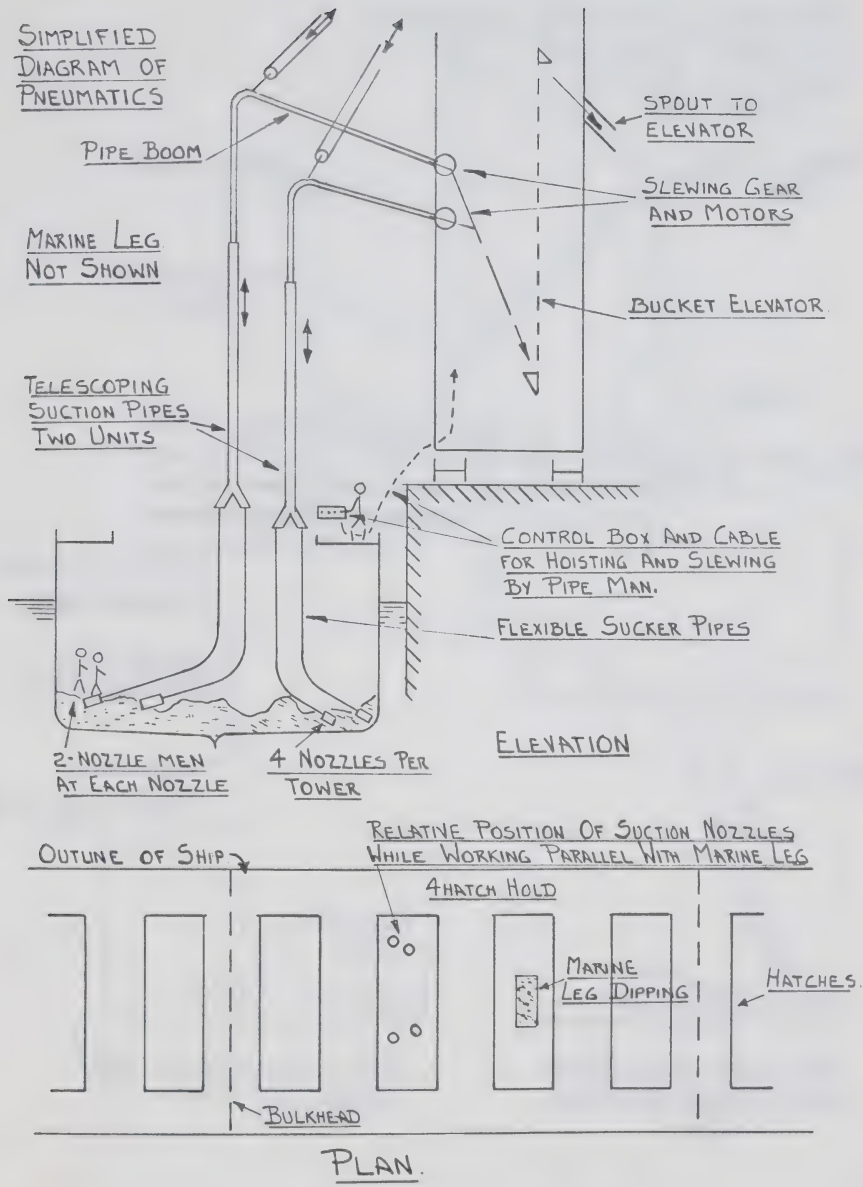
## Appendix I





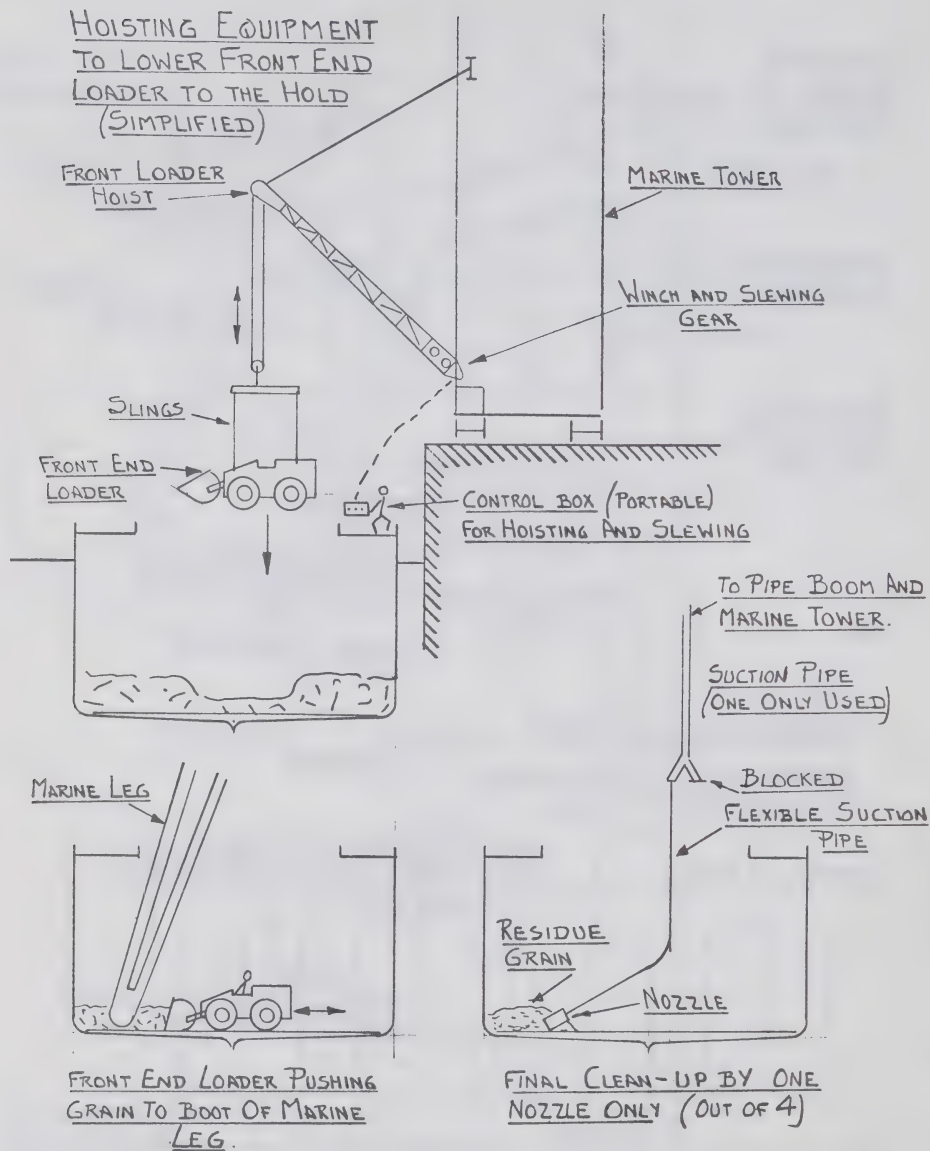
SIMPLIFIED DIAGRAM OF PNEUMATICS

Appendix I



# HOISTING EQUIPMENT TO LOWER FRONT-END LOADER TO HOLD

## Appendix I



## APPENDIX II

Report of Mr. Kristoffy on behalf of  
The National Harbours Board in the  
matter of methods and costs of unloading  
grain vessels through "pneumatic"  
instrumentalities.



NATIONAL HARBOURS BOARD  
Montreal Harbour

CONSEIL DES PORTS NATIONAUX  
Port de Montréal

Montreal 1, P.Q. June 28, 1967

Committee on Manpower Problems  
1155 Dorchester Blvd West  
Montreal 2, P.Q.

Attention: Mr. S.H. Hartt

Dear Mr. Hartt,

In reply to your letter of June 22, 1967, please find the requested information below.

Re: Item No. 1

The unloading of a typical hold containing 150,000 Bushels of wheat by the pneumatics assisted method used to take the following times:

Elevators 1 and 3	9.75 hours
Elevator 5	7.75 hours

Please refer also to my former report dated October 11, 1966; page 8.

If you intend to compute the total unloading time of a given boat from above basic unloading time, then the following facts must be considered:

- a) The basic times are applicable for a boat carrying 900,000 Bushels of good quality wheat in 6 holds; all holds containing different grades of wheat.
- b) If the boat carries a "straight" cargo, that is, a uniform quality wheat in all holds, then the unloading time will be approximately 15% shorter. The unloading time of a partially uniform cargo is in between

## Appendix II

the basic time and the shortest possible time (15% less). For practical purposes you may use the following figures:

3 or more different grades (basic time)	100%
2 different grades	93%
Uniform cargo	85%

- c) If the ship is smaller than the basic ship of 900,000 BU, or the number of holds is more than 6, then the unloading time is longer than the "basic" time. The approximate figures are:

300,000 BU ship:	basic time plus 15 to 20%
500,000 BU ship:	basic time plus 10 to 15%
700,000 BU ship:	basic time plus 5 to 10%
7 or 8 holds:	basic time plus 10 to 15%
9 holds:	basic time plus 15 to 20%.

All above figures are approximate; computed from former observation data, which we did not preserve.

### Re: Item No. 2

The hourly wages have changed during the past years, therefore, I am listing the manhours instead of the costs; again computed for the typical 150,000 BU hold.

<u>Elevators 1 and 3</u>			<u>Elevator 5</u>	
	No. of men per tower	Menhours for a 150,000 BU hold	No. of men per tower	Menhours for a 150,000 BU hold
Subforeman	1	9.75	1	7.75
Pipe men	2	19.50	2	15.50
Nozzle men	8	70.00	9	69.75
<u>TOTAL:</u>	11	109.25	12	93.00

Please, see also writer's quoted report; pages 6 and 8.



Re: Item No. 3

According to our agreement with Hydro-Quebec the unit price of the electrical power is not a constant figure but a function of the totalized load factor (which is the ratio between the average demand and peak demand). In our range the unit price varies as follows:

Load factor	%:	25%	30%	35%	38%
Price per KWHR	¢:	1.41	1.23	1.10	1.03

Because of this complicated agreement, it is almost impossible to figure out the real electrical power costs for the individual elevators, especially for the unloading alone. It is obvious, however, that the very high power consumption of the pneumatics was the principal cause of the high totalized Harbour demand, which kept our power costs also high. We have calculated (in 1963) that, by abandoning the pneumatics in favour of power shovels at that time, our savings would be about \$50 to \$60,000 per year from the electrical bills alone.

The much lower maintenance on the power shovels (or on the front loader system) and the indirect savings due to faster unloading have been estimated to be in the range of another \$50,000 per year.

Because of these economical reasons, the pneumatic unloading systems have been condemned in 1964 and the power shovels have been installed to replace pneumatics. The front loader operation in turn replaced the pneumatics.

To illustrate our points, find our power costs tabulated below for the last 5 years.

<u>Years:</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
Power costs \$:	259,000	290,000	338,000	331,000	351,000
Unit price per KWHR ¢:	1,234	1.10	1.08	1.10	1.03
Consumption million KWHR:	21.0	26.3	31.2	29.9	34.1
Peak: KW	10,000	11,750	11,250	12,240	11,790

## Appendix II

The individual peak demands per elevator were (with pneumatics):

Elevators 1 and 2	4,000 KW
Elevator 3	3,200 KW
Elevator 4	3,000 KW
Elevator 5	<u>3,000 KW</u>

TOTAL: 13,200 KW

which is higher than the actual peak demand.

Out of above individual peaks, the pneumatics accounted for the following amounts:

Elevators 1 and 2 combines	2,000 KW
Elevator 3	2,000 KW
Elevator 4	nil KW
Elevator 5	<u>2,500 KW</u>

TOTAL: 6,500 KW

### Re: Item No. 4

The overall unloading time of the pneumatics is the longest of the three methods discussed in writer's mentioned report. Naturally, by using the power shovels or the front loader method, indirect savings will occur because of the shorter overall unloading time. However, it would be extremely difficult to figure out these savings in dollars and cents.

Due to the fact that the power cost savings alone are sufficient to warrant the change, we never endeavoured to compute the indirect savings which may be in the range of \$10-15,000 per year per elevator.

As to your last question, I wish to point out that the majority of ships which we unload carry different grades of grain and thus paragraph (b) in Item 1 does not apply; most of the time the basic time is 100%. However, the average ship is smaller than 900,000 BU, consequently paragraph (c) applies almost every time. This explains that the actual average unloading time is longer than the theoretical unloading time computed from the unloading of the imaginary 150,000 BU hold.

In effect the pneumatics assisted unloading is the most expensive and the longest of the three unloading methods, therefore, it has been decided in 1963 to abandon it in favour of the power shovels and later of the front loader method.

I trust above explanations answer your questions. If more accurate figures would be required, then we would need to start the calculations anew from time data available.

Yours truly,

(signed)

E. Kristoffy  
Eng. in charge Mech. Design.

EK/fp



### APPENDIX III

A study prepared by Mr. André Ryba  
dealing with the savings by the  
National Harbours Board in employing  
these new grain unloading methods.





MONETARY SAVING IN MONTREAL HARBOUR  
(GRAIN ELEVATORS SECTION)

OBJECT OF THE STUDY: Every technological change results in a decrease in costs, thus saving the company money for the operation concerned. With the introduction of Front-end loaders, the National Harbours Board has saved money in the unloading of grain. We shall try to give an estimate of the amount of money saved or to be saved.

1. According to Mr. Dufresne's report, the old and the new unloading methods take about the same time, the second taking somewhat longer. Consequently, there is no gain in the unloading speed. Moreover, even if there were such a gain, it would be limited by the capacity of the elevators.
2. Table 4 shows an important reduction in personnel. It shows the work crews that had to be maintained in the port under the old method and the composition of the new crews with a greatly reduced work force. (It should be noted that even if there is no cargo vessel to be unloaded the crews are on the premises and the men have to do light cleaning jobs in the elevators and are paid at the rates of their usual classification). The work force went down from a total of 119 men to 30 men (or 26, if we exclude the foremen who do not come under the Collective Labor Agreement).
3. Through the reduction of the work force, the National Harbours Board in Montreal is able to save money on wages paid. In order to calculate the money saved, we take the year 1966 as a reference. We also assume that, on an average, an employee worked 1500 normal working hours from April to December 1966. First, we calculate wages paid to employees working according to the old method and secondly, wages which

### Appendix III

should have been paid by the company if the technological change had taken place in April 1966. Subtracting one amount from the other, we obtain the saving on wages paid to employees working normal hours. Table 5 shows that this difference amounts to \$303,584.

4. As mentioned in our study of overtime worked by employees, overtime is directly related to the irregular arrival of cargo vessels in Montreal Harbour. On the other hand, the technological change does not affect the speed with which grain is unloaded. Consequently, the technological change which has taken place in the unloading of grain in Montreal Harbour does not reduce the amount of overtime worked by the crews. Overtime is not related to the technological change which has taken place. However, since the size of the crews has been reduced, and since the crews on the whole continue to work the same amount of overtime, the company then pays overtime to a maximum of 30 men instead of 119 - which represents a considerable monetary saving. If the technological change had been effected as of April 1st, 1966, the 30 men would have done the same overtime as the 119 men under the old method and their income through overtime would have represented, on an average, 46.4% of their total income. The income they would have earned for normal working hours would have represented an average of 53.6% of their total income, as was the case for the employees working under the old method during 1966. Consequently, \$303,584 represents the total saving of 53.6% in wages (including money saved on wages paid for normal working hours and for overtime). However, the figure of 46.4% might be called into question as reflecting the influence of the longshoremen's strike. We have, therefore, made two calculations - one using the 46.4% figure and the other using a figure of 42% representing the average portion of the overtime wages in the total wages for 1965 - the reduced figure for the year 1966 being between these two extremes. In this latter case, \$303,584 represents 58% of the total monetary saving.
5. From the total money saved on wages (\$566,388 or \$523,420 according to which calculation is used), we must deduct the cost of hiring the Front-end loaders

- 4 of the Front-end loaders cost \$46 per calendar day and 4 cost \$35 per day. From April to December, there are about 270 days for which the Board must pay hiring costs - (cf. Table 5). Maintenance and power costs have hardly changed with the new method and are not taken into consideration. At first approximation, the amount saved is between \$478,900 and \$435,900.
6. The installation of cranes to lower the Front-end loaders into the holds of the cargo vessels has cost \$15,000 per elevator, nearly \$60,000 in all. However, these costs are of a different nature than the costs of wages, hiring Front-end loaders and maintenance. The erection of these cranes is an investment in equipment, the cost of which cannot be wholly deducted from the annual monetary saving made but must be deducted each year according to the depreciation schedule of this equipment.
  7. If we take into consideration expenses for the acquisition of new equipment, the money saved by the National Harbours Board totals between \$425,000 and \$465,000 per year.
  8. Of the 66 workers actually displaced by the technological change, 26 were able to fill vacancies in regular crews, while the other 40 were given supernumerary positions in the various grain elevators. The National Harbours Board asks that the wages paid to them be deducted from the amount cited above; this would thus reduce the amount of money saved. These workers are assigned to a type of work (usually cleaning chores) other than grain unloading and even if they are not needed the total amount of wages paid to them cannot affect the monetary saving achieved in another operation. On the other hand, we can consider that the wages paid to these workers constitute one use of the monetary saving achieved in the grain unloading operation and we can calculate the amount still available after this first utilization of the money saved. If we consider that these 40 workers are useless, the company pays \$147,400 in wages (at the 1966 rate of \$2.29 for elevator helpers), and the amount available after this first utilization of the monetary saving is between \$277,600 and \$317,600.

### Appendix III

The question is, are all these 40 workers in fact useless?

We do not think so, for the two following reasons:

- owing to the natural decrease of the work forces, these supernumerary workers will, with the years, be absorbed by the regular crews;
- because of the considerable decrease in the size of the crews and because of a greater continuity in the unloading operations, the grain handlers have less time to do maintenance work in the grain elevators; under the old method this work was done by crews of grain unloaders while they were waiting for the cleaning operations to start on the boat. The supernumerary elevator helpers are thus doing work which the regular crews may not have been able to accomplish during their normal working hours.

The question is: how many of these 40 men are really useless? It is difficult to give an answer... One thing is certain: after first using the monetary saving to pay wages to "useless" men in grain elevators, the amount still available is higher than the figures given above which constitute a minimum corresponding to the hypothetical case in which the 40 men would be "useless".



TABLE 4

BREAKDOWN OF THE GRAIN UNLOADING CREWS - BREAKDOWN BY ELEVATOR

	<u>ELEVATOR NO. 1</u> (per marine leg)	<u>ELEVATOR NO. 3</u> (per marine leg)	<u>ELEVATOR NO. 4</u> (per marine leg)	<u>ELEVATOR NO. 5</u> (per marine leg)
<u>OLD METHOD:</u>				
	1 sub-foreman 2 pipemen 8 nozzlemen (2 marine legs)	1 sub-foreman 2 pipemen 8 nozzlemen (2 marine legs)	1 sub-foreman 4 shovel operators 12 shovellers (3 marine legs)	1 sub-foreman 2 pipemen 9 nozzlemen (2 marine legs)

	<u>ELEVATOR NO. 1</u>	<u>ELEVATOR NO. 3</u>	<u>ELEVATOR NO. 4</u>	<u>ELEVATOR NO. 5</u>
<u>NEW METHOD:</u>				
	3 Front-end loader operators 1 pipeman 2 nozzlemen 1 foreman	3 Front-end loader operators 1 pipeman 2 nozzlemen 1 foreman	6 Front-end loader operators 2 nozzlemen 1 foreman	3 Front-end loader operators 1 pipeman 2 nozzlemen 1 foreman

TABLE 5CALCULATION OF THE MONETARY SAVINGA) SAVING ON WAGES1. Saving on wages (normal working hours)a) Cost in wages - old method

## - wages of the sub-foreman:

9 sub-foremen:

$$9 \times 1500 \times 2.66 \dots\dots\dots = \$ 35,910$$

## - wages of the pipemen:

Elevator No. 1:  $2 \times 2 = 4$ Elevator No. 3:  $2 \times 2 = 4$ Elevator No. 5:  $2 \times 2 = 4$ 

total = 12

$$12 \times 1500 \times 2.56 \dots\dots\dots = 46,080$$

## - wages of the nozzlemen:

Elevator No. 1:  $2 \times 8 = 16$ Elevator No. 3:  $2 \times 8 = 16$ Elevator No. 5:  $2 \times 9 = 18$ 

total = 50

$$50 \times 1500 \times 2.46 \dots\dots\dots = 184,500$$

## - wages of the shovel operators:

Elevator No. 4:  $4 \times 3 = 12$ 

$$12 \times 1500 \times 2.61 \dots\dots\dots = 46,980$$

## - wages of the shovellers:

36 shovellers

$$36 \times 1500 \times 2.51 \dots\dots\dots = \underline{135,540}$$

$$\text{Total} \dots\dots = \underline{\$429,010} \text{ (1)}$$



TABLE 5 (Continued)b) Cost in wages - new method

- wages of the Front-end loader operators:

15 Front-end loader operators

$$15 \times 1500 \times 2.70 \dots\dots\dots = 60,750$$

- wages of the pipememen:

3 pipemen

$$3 \times 1500 \times 2.56 \dots\dots\dots = 11,520$$

- wages of the nozzlemen:

8 nozzlemen

$$8 \times 1500 \times 2.46 \dots\dots\dots = 29,520$$

- wages of the foremen:

4 foremen

$$\$5909 \times 4 \dots\dots\dots = 23,636$$

$$\text{Total} = \underline{\$125,426(2)}$$

c) Savings on wages (normal working hours)

Cost in wages, old method - cost in wages, new method:

$$\$429,010 - \$125,426 \dots\dots\dots = \underline{\$303,584}$$

TABLE 5 (Continued)

2. Total saving on wages

- a) with the 1966 figure, 46.4% =
- $\frac{\text{income for overtime}}{\text{total income}}$

$$\frac{\$303,584}{.536} = \dots = \$566,388$$

- b) with the 1965 figure:
- $\frac{\text{income for overtime}}{\text{total income}} = 42\%$

$$\frac{\$303,584}{.536} = \dots = \$523,420$$

	<u>Maximum</u>	<u>Minimum</u>
B) <u>TOTAL SAVING ON WAGES</u> . . .	\$566,388	\$523,420
Less: cost of hiring the Front-end loaders:		
4 at \$46: 270x4x46 = \$49,680		
4 at \$35: 270x4x35 = \$37,800		
	\$87,480	- 87,480
C) <u>FIRST APPROXIMATION OF THE</u> <u>SAVING</u>	<u>\$478,908</u>	<u>\$435,940</u>

TABLE 6

## HOURLY WAGE RATE FOR THE FIVE CLASSIFICATIONS OF GRAIN HANDLERS

	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>Jan. 65</u> <u>Aug. 65</u>	<u>Aug. 65</u> <u>Dec. 65</u>	<u>1966</u>
Sub-foreman	2.04 + 5¢ elev. 4	2.10 + 5¢ elev. 2	2.16 + 5¢ elev. 2 and 4	2.51	2.56	2.71
Shovel operator	1.94 + 5¢ elev. 2	2.00 + 5¢ elev. 2	2.06 + 5¢ elev. 2 and 4	2.41	2.46	2.61
Shoveller	1.84 + 5¢ elev. 2	1.90 + 5¢ elev. 2	1.96 + 5¢ elev. 2 and 4	2.31	2.36	2.51
Nozzleman	1.84	1.90	1.96	2.26	2.31	2.46
Pipeman	1.94	2.00	2.06	2.36	2.41	2.56
Front-end loader operator	-	-	-	-	-	2.70

Appendix III



#### APPENDIX IV

A study by Mr. André Ryba as to the percentage of base earnings of those employees, concerned in this dispute, derived from overtime, in a sample period 1962-1966.





OVERTIME WORKED BY GRAIN HANDLERS

OBJECT OF THE STUDY: To calculate overtime worked by grain handlers from 1962 to 1966 and compare overtime wages to total wages.

1. Prior to the introduction of Front-end loaders, grain handlers were divided into five classifications: sub-foreman; shovel operator; shoveller; nozzleman; pipeman. The hourly wage rates varied according to the classification. The classification of a worker changed frequently from week to week and even during the course of the same week, since he might perform two jobs falling under two different classifications. Moreover, a worker classified under a specified category might work overtime in another category. For example, a shovel operator might work overtime as a shoveller. As regular working hours and overtime were often not paid according to the same basic hourly rate because of the classification change, it seemed useless to limit our study merely to the calculation of overtime. It seemed much more informative to calculate the percentage of the total net wages represented by the wages earned through overtime. (The total net wages are the total wages prior to all deductions for income taxes and other dues.) Thus, we eliminate a factor liable to diminish the value of the comparison, namely the fact that during the course of the same week or the same month, a worker can carry out his normal task under a certain classification and work overtime under another.
2. To carry out this survey, we made a sampling. It was not easy to choose our sample population. The workers considered for this survey had to meet certain requirements:
  - Since the survey covers the years 1962 to 1966 inclusive, the handler had to be hired before April 1, 1962 in order to be part of the sample.

## Appendix IV

- The worker had to be employed by the company from 1962 to 1966 inclusive without major interruption (an interruption of work of not more than one month during one year).
- The worker considered must be affected by the technological change that occurred in the harbour and must not have left his work voluntarily, nor must he have secured a job at least equal to the one he left. (We took into consideration only those who became helpers in the grain elevators).

Our choice was very much limited by all these factors. According to the National Harbours Board, 90 workers were employed to unload grain cargo vessels at the time the technological change occurred; 24 of these kept their job and 66 were transferred to the grain elevators; most of them became helpers. Taking into consideration the difficulties encountered in choosing the handlers to be considered, it seemed that a sample of 15 workers (i.e. slightly more than a quarter of the workers concerned) would give satisfactory results. As far as possible, we tried to choose the workers from each of the five classifications, proportionately to the number of workers under each classification. However, since the classification of a worker changes from month to month and even more so from year to year, we chose to conduct our survey on an individual rather than on a classification basis. However, while studying the percentage of total net wages represented by the wages earned through overtime work for each of the workers making up our sample irrespective of their classification of the worker during the year under study (i.e. the classification under which he earned the greatest portion of his total net wages). It should be noted that although from 1962 to 1966, it is always the same worker who is under consideration in our individual study, the same members of our sample group do not appear under the same classification every year in the classification study.

3. In the course of our study, we compare wages received for overtime work to wages received for regular working hours.

In calculating wages received, we have not taken into consideration allowances paid for sick leave, since they do not represent payment for an actual work period to which overtime work could be added.

4. Tables 1 and 3 show an increase in overtime from 1962 to 1966 which is expressed as an increase in the portion of wages paid for overtime in the total net wages. In 1962, payment for overtime represented on an average 29.3% of the total wages (i.e. slightly above 25%), whereas from 1963 to 1965 it accounted for 42% and for 46.4% in 1966. Overtime is generally caused by the irregular arrival of cargo vessels. On certain days, the arrival in port of several cargo vessels requires a large amount of overtime from the work crews; on other days, there are insufficient cargo vessels berthed to occupy the unloading crews during the eight regular working hours. Cargo vessels must sometimes be unloaded on Saturdays and even on Sundays. On Saturdays, work is paid at time and a half, and on Sundays, double time.
5. Table 3, which indicates wages received for overtime, expressed as a percentage of the average total net wages for each month of the five years under consideration, shows two important overtime work periods corresponding to the grain unloading peak periods: at the beginning of the season, especially during May and June, and at the end of the season, during October and November, before the closing of navigation on the St. Lawrence. During these periods, half of the total net wages is sometimes earned as overtime pay. For example, May and June 1964; November 1963. During the month of December, the portion of overtime pay compared to the total wages shows a sharp decline. The other off-peak period is to be found during the months of July, August and October.
6. The large amount of overtime done at the beginning of 1964 could be related to the large sales of wheat to Russia that were shipped from Montreal Harbour. Contrary to what is suggested by the National Harbours Board, this is not an exceptional situation since it is closely linked to the commercial activity of the harbour. On the other hand, all overtime work caused by a strike can be considered as exceptional. In July 1965, there



## Appendix IV

was a strike in the harbour; the figures do not show that a resumption of work there was more overtime work than usual. Nevertheless, the figures of 56.8% for July 1966 and 44% for August of the same year (and even perhaps 48.72% for September) are unusual for this period of the year, during which activities generally slow down, and can be explained by the delay caused by the longshoremen's strike in June 1966. It is possible that the average of 46.4% for the year 1966 was somewhat inflated by this strike.

7. Although Table 2 is much less accurate than tables 1 and 3 since it is made up from smaller samples for each classification and on the basis of the estimated main classification of the worker, it remains significant nonetheless. The wages received for overtime make up a large proportion of the total net wages, especially for shovellers and shovel operators. (In the case of grain shovellers, nearly half of their wages in 1966). Nozzlemen do the least overtime. In 1962, wages for overtime represented only 18.5% of total wages (29.7% for the shovellers) and in 1966, 36.9% of the total wages (49.4% for the shovellers, 45.8% for the shovel operators). Table 2 shows the year by year progression of overtime work.
8. From 1962 to 1963, this growth was rapid (the proportion of wages paid for overtime in relation to the total net wages, increased from 29.3% to 42.5% on the average for the 15 workers making up the sample). In 1964 and 1965, the percentage of overtime wages as compared to total net wages remained at 41.3% and 41.8%; it attained 46.4% in 1966. This growth should be compared with the increase in grain unloading operations in the harbour. Arrivals of grain shipments in Montreal Harbour total: (in thousands of bushels):

1962	88,997
1963	149,506
1964	163,460
1965	137,611
1966	180,719

However, it should be remembered that overtime is due mostly to the irregular arrival of vessels in the harbour.

9. This study shows that for the grain handler, wages earned through overtime make up a large portion of his annual earnings (between 42 and 46%). Income received through overtime is nearly equal to the wages paid to the worker for a normal 40-hour week.

It would have been interesting to know what proportion of the total wages for the 15 workers who now work as helpers in the grain elevators was earned for overtime, but the figures for the year 1967 are not yet available.

Appendix IV

TABLE I

WAGES RECEIVED FOR OVERTIME  
AS PERCENTAGE OF TOTAL NET WAGES  
COMPILED ON AN INDIVIDUAL BASIS  
DISREGARDING CLASSIFICATION

N.B.: figures indicate percentages

---

1962

18, 19, 22.1, 24.6, 25.5, 28.9, 29.1, 29.7,  
30.4, 30.8, 32.2, 37.3, 38.7, 41.3,

size of the sample: 15  
lowest value: 18  
highest value: 41.3  
intermediate value: 29.7

average: 29.3

variance: 45.92

1963

34.5, 37, 39.8, 40.6, 41.1, 41.3, 41.4, 42.7,  
43.4, 44.6, 44.8, 46.4, 48.1, 48.4,

size of the sample: 15  
lowest value: 34.5  
highest value: 48.4  
intermediate value: 42.7

average: 42.5

variance: 14.53



TABLE 1 (Continued)1964

34.06; 38; 39.7; 40.5; 40.6; 41.1; 41.2; 42.3;  
 42.5; 42.6; 42.7; 42.8; 43.2; 44.1; 44.2;

size of the sample: 15  
 lowest value: 34.06  
 highest value: 44.2  
 intermediate value: 42.3

average: 41.3

variance: 6.80

1965

34; 34.5; 36; 40.2; 41; 42.1; 42.2; 42.4; 43.5;  
 43.7; 44.5; 44.7; 45.5; 46; 47.2;

size of the sample: 15  
 lowest value: 34  
 highest value: 47.2  
 intermediate value: 42.4

average: 41.8

variance: 16.73

1966

36; 37.9; 42; 44.9; 45.44; 45.5; 46.8; 47.3; 48.4;  
 48.6; 48.6; 49; 49.6; 50.3; 57.1;

size of the sample: 15  
 lowest value: 36  
 highest value: 57.1  
 intermediate value: 47.3

average: 46.4

variance: 29.39

TABLE 2WAGES RECEIVED FOR OVERTIMEAS A PERCENTAGE OF TOTAL NET WAGESANNUAL COMPILATION BY CLASSIFICATION

N.B.: Figures are in percentages and represent an average value.

---

	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
Shoveller	29.7	46.4	43.2	43.5	49.4
Shovel operator	28.9	43.8	45.5	41.1	45.8
Nozzleman	35.8	42.8	42.2	44.8	45.1
Pipeman	18.5	38.4	34.06	34.5	36.9
Sub-foreman	-	-	-	38.6	47

TABLE 3

WAGES RECEIVED FOR OVERTIME  
AS A PERCENTAGE OF TOTAL NET WAGES  
MONTHLY COMPILATION ON AN INDIVIDUAL  
BASIS, DISREGARDING CLASSIFICATION

N.B.: Figures are in percentages and  
represent an average value.

---

	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
April	39.65	31.68	56.8	42.1	46.5
May	29.87	46.25	54.1	42.9	40.8
June	30.62	45.04	51.3	46.5	47.3
July	24.82	26.33	47.1	-	56.8
August	14.13	20.2	41.3	35.2	44
September	22.43	39.98	33	39.7	48.72
October	34.53	36.13	18.2	39	40.84
November	40.7	60.31	26.3	48	47.74
December	20.39	44.03	18.3	40	37.92



## APPENDIX V

An analysis prepared by Mr. André Ryba of the experience with automation and redundant employees in other Canadian and U.S. situations and disputes, with general references to the literature and public philosophy in this matter.





"The problem is one of satisfying the company's very legitimate objective of progressing with the times and being fully efficient, without unnecessarily impairing the rights of men and communities who might be adversely affected in the process. THE PROBLEM IN SHORT IS ONE OF MAKING A RECONCILIATION BETWEEN ECONOMIC PROGRESS AND HUMAN SECURITY." (1)

That is the problem all individual firms and industries are faced with because of technological change and automation.

Technological change, by making possible production at a lower cost, i.e. by increasing the firm's efficiency, is a factor of progress and should be supported. It benefits the employer by reducing production costs, and the consumer by lowering prices, and in the long run contributes to the raising of the standards of living.

"Every responsible trade Unionist recognizes that automation can confer immense benefits." (Canadian Labour Congress)

"To produce more with the same amount of human efforts is a sound economic and social objective." (General Motors and United Auto Workers)

On the other hand, a firm wanting to survive and meet the ever changing needs of consumers has to modify its structures, equipment and staff.

"However, the broad economic benefits of change which accrue to society as a whole must not be allowed to obscure its responsibility to those individuals who, in the process of change, have their own livelihoods threatened. Technological and other changes can and do

(1)

Report of Industrial Inquiry Commission on Canadian National Railway - "Run-Throughs".

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disrupt the lives of many employees through job dislocation. We must recognize the necessity of doing everything humanly possible to ensure that individuals do not become hapless victims of such changes." (2) To distinguish between those who benefit from this technological change and those who are its victims is a human, moral and economic problem.

Human: man's dignity must be preserved and it must be proven to him that he still has an active role to play in a technical society;

Moral: we cannot accept to enjoy the benefits of new techniques without doing our best to facilitate the adjustment of those who are affected by this change;

Economic:  
workers are also consumers and it would be senseless to plan automatically-controlled factories capable of providing a large and steady outflow of goods if we did not at the same time, foresee an economy in which those goods could be distributed and consumed by men. An important rule of economic states:  
unemployment = less purchasing power = goods unsold = unemployment increases = more important reduction of purchasing power...

Finally, to ignore workers displaced by technological changes would mean depriving Canada of part of its manpower, not taking advantage of all factors of production.

Employers have a responsibility towards workers who have lost their economic security because of technological changes introduced for the benefit of investors and consumers. Philanthropy is not the word to be used in

(2)

Conseil Economique du Canada: Une déclaration au sujet de l'adaptation de la main d'oeuvre aux changements technologiques et autres.

describing the help given by firms to workers displaced by technological changes; they are only adding to their own costs part of the social cost of automation (the displaced workers to be supported by society) which is only normal since these firms benefit greatly from technological development. The workers who are the victims of technological changes have a right to some adjustment assistance. Employers have an obligation to help their employees affected by these changes and this assistance must be considered for book-keeping purposes under the same heading as other costs such as purchasing, operation and maintenance of new equipment. An ever increasing number of firms accept this responsibility towards labour and in Canada as well as the United States collective agreements provide clauses for the protection of workers affected by technological change.

But problems created by technological progress also need solutions which are to be found outside the limited scope of business and industry. Society as a whole also profits largely from technological development and therefore has no right to let business assume the entire social cost of automation. Governments, federal or provincial and within their constitutional rights, must support the companies in their assistance programs for employees affected by automation and also promote their own when such programs cannot be undertaken by a company. Economists such as the members of the National Committee on Technology, Automation and Economic Progress in the United States, do not consider technological change as the true cause of unemployment but relate it to an insufficient level of overall demand and consequently request government action.

This approach to the problem was opposed by many persons and in particular John Diebold who stated: "The very magnitude of the problem of social innovation means that we should not look to government for the solution (...) It is a problem to be solved by the private as well as the public sector".

Certain measures aiming to correct the adverse effects of technological changes are taken only by the firms concerned but others require cooperation between management and government. We will now enumerate and comment on some corrective measures in the light of past



experience in various industrial sectors and of reports submitted by various committees created to study automation problems. However, we must not forget that there is no universal measure applicable to all industries. Each situation must be studied separately: specific solutions, based not only on past experience but also in accordance with the collective agreement signed by the firm concerned, must be found and they must, insofar as possible, be approved by management and the unions.

I) Measures concerning work organization and total working hours.

1. Full application of the 40-hour work week i.e. elimination of overtime as proposed in the Report of the Commission set up to study the effects of Industrial Conversion at Domtar (Windsor). Workers may lose the opportunity of higher earnings but the overall effects of this measure are preferable to mass lay-offs. The company which, for the same production output, has to increase its labour force increases its production costs.

2. Reduction of the working week. The Domtar Report also takes into consideration the reduction of weekly working hours from 40 to 38 hours, with or without compensation for working hours lost. Another example of such a reduction is the agreement of 1962 between the International Brotherhood of Electrical Workers Local 3 and the New York City Electrical Industry instituting the 25-hour week for the members of the union who had been working 30 hours a week since 1936. This new contract stipulates a five-hour work-day and one hour overtime for a possible total of 30 hours. This agreement, arrived at in a full-employment period, was credited for preventing, in a large measure, lay-offs during a slump in the construction business. As stated by Mr. Wirtz, Secretary of Labour in the United States, a shorter working-week may result in higher prices by increasing production costs. It usually leads to an increase in hourly rates. It was estimated in a study made by the AFL-CIO that an hourly-rate increase of 2.6% would be required to compensate for a 40-hour to a 39-hour week change-over. On the other hand, there are numerous workers who prefer a higher income to more leisure time. The reduction of weekly working hours

might be a solution to the displacement of workers within a factory by creating new jobs, but it might also shift the problem to the global economy level: nothing prevents a man from working for more than one company. A look at some collective agreements shows an 8-hour day (82%), a 40-hour week (63%) and a 35 to 37 1/2 hour-week (only 6%).

3. Continuous work. The Domtar Commission has also studied the effects of spreading production over seven days, or continuous work. If production volume is maintained, specialists think that new jobs can be created, without additional cost to the Domtar Company. An increase in production will not necessitate a proportionate increase in the labour force; more employees will be needed of course, but relatively less than with non-continuous work. The seven-day working week increases efficiency through a better organization of shifts.

4. Spreading of vacation period. The report also favors a vacation period evenly spread over twelve months. Additional permanent jobs could thus be created for workers hired on a temporary basis to replace permanent workers during the vacation period.

5. Sabbatical holidays. The Commission has also taken into consideration the question of sabbatical holidays. All employees who have over twenty years seniority would, every five years, enjoy one additional week of vacation. Such a measure would create few new jobs and would represent a sizeable expenditure for the company. At Domtar, for example, it would cost more than the full application of the 40-hour week and would create twelve times less new jobs. However, two Canadian companies have accepted a clause in a collective labour agreement covering 3,800 employees, which provides for a sabbatical holiday of 13 weeks with an allocation of 520 hours after fifteen years of continuous service. In 1962, an agreement between the United Steelworkers and six companies provided for three months vacation every five years for workers with a seniority of more than 15 years.

## II) Natural reduction in staff or attrition

This method of adjustment to technological change consists in taking advantage of voluntary separations, normal retirements and deaths to reduce the staff.

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"The object of attrition, properly used, is to bring about an equilibrium between anticipated lay-offs and the normal turnover of the labour force by not replacing the workers who leave". (3) This measure can more or less be effective depending upon the nature of the change, the time available to complete the change and the rate of natural reduction in staff. The available time may be lengthened by mutually acceptable separations or by favoring early retirement with compensation for loss of benefits. If the attrition method is to be efficient, the firm must refrain from hiring new employees. A shortage of man-power in the plant can be solved by asking the workers to work overtime or by hiring employees on a temporary basis. This latter method is the one practised at Domtar where "attrition" is a method commonly used. In 1964, Pacific Press Limited of Vancouver decided to transfer into the same building all its activities which were up till then dispersed in three different ones. Following an agreement with the Vancouver Newspaper Guild, a reduction in the permanent staff was to be done solely by "attrition". Approximately twenty men were hired on a temporary basis to replace employees who had left the company before the transfer came into effect. Temporary employees may work on jobs not involved in the change until they can be replaced by workers displaced from other jobs or filling jobs that will not last.

At Imperial Oil Limited where, for several reasons, the labour force was reduced from 14,400 to 11,300 men during the 1957-1965 period, the natural reduction in staff has probably created more vacancies for displaced workers than any other method. Whenever possible the company has followed a deliberate policy of using temporary help on jobs likely to be eliminated following organizational changes.

For the natural reduction of the labour force to be effective, it must be possible for the firm to transfer employees from one job to another which may require very

(3)

Economic Council of Canada: op. cit.



high change-over expenditures. In some industries, "attrition" may present other inconveniences such as having to make do with older workers and available skills because of the non-hiring of new employees. Nevertheless, "attrition" is a method widely used. Another example worth mentioning is Canadian Johns-Manville Company Ltd. of Asbestos where 30 displaced men in a mill were reabsorbed by the attrition method and also the Moirs Company of Halifax and a Midwest oil refinery where a stoppage of man-power input three years before the date of final separation allowed the attrition method to solve the laying-off of 1800 workers.

If, when technological changes take place jobs are not available, displaced workers may be placed in a reserve labour pool awaiting new job openings created by natural reduction. The best known example is the Kaiser-Steel Union Sharing Plan which set up such a pool for workers displaced by technological changes.(4) However, employees who had the right to become part of this pool, had also the alternative of being laid-off, and receiving additional unemployment benefits and other usual seniority benefits. The pool workers were allocated to different jobs such as painting and manufacturing of products usually bought under contract, as long as they were not encroaching on regular employment, they could also participate in training programs. Whatever the work done, the lowest income they could get, during 52 weeks, was the salary paid for the job that they held before the transfer. The Kaiser-Steel example was followed by other firms. The cost of a temporary surplus of man-power must be considered in relation to the numerous additional advantages obtained by changes in the operations made possible by the existence of the reserve labour pool.

(4)

As it is not always evident that the lay-off of a worker is the result of technological change, the marginal cases were affected to the pool, according to their seniority, up to a maximum number of workers whom the company had the obligation to keep.

III) Transfer to other jobs and problems created by seniority rules

Transfers within the same plant or interplant transfers in the case of multi-plant companies, is another means available to firms in order to prevent loss of employment due to technological change. These transfers, within the same plant or between plants, may be carried out in several ways: the employee is simply transferred to a new job; preferential right to employment gives, "so far as this may be practicable" to laid-off workers of a plant the right to special consideration when applying for a job at another plant of the same company (United Auto Workers and General Motors); the harshest form of transfer right is the bumping right where a worker affected by technological change may "bump" a junior employee. Domtar and Canadian National saw employees taking advantage of this right. Numerous collective agreements, including the one signed by the Montreal Harbor, include clauses concerning bumping rights. It is worthy of note that workers displaced by technological change who, due to their seniority rights, jump over workers with less seniority, may be a source of great dissatisfaction among the latter. Under an agreement between Chrysler and UAW, employees with a high seniority affected by changes in a plant, have preferential rights of employment in other plants of the company before all laid-off employees may be recalled - which constitutes another form of displacement or bumping. The transfer of a worker to a specific job is generally done after reading his personal file and taking into consideration his age, seniority and former salary (Manitoba Rolling Mills). The transfer rights of an employee are generally determined by his status, his qualifications and seniority.

Seniority is generally the main factor in determining which employees are authorized to transfer to other positions and what rights they may retain in doing so. Seniority is a system of preferential employment based on the length of service and is the main protection against the loss of employment (Lay-offs usually take seniority into account). One of the most important problems encountered in transfer programs is the retention of the transferee's seniority rights in his new job.

The solution of the seniority problem will have consequences on the welfare and the security of employment for transferred workers and workers who have to admit the transferred workers in their ranks. When they start working, the transferred workers will have to be integrated into the seniority list of their new working unit. They may accumulate all the seniority to which they are entitled; this may reduce the professional security of the workers already employed and the ensuing tension will depend on the number of employees that are transferred. (After the closing of the CN Warehouse in London, every worker transferred with his job did not lose his seniority). Or their seniority may start on the day they take up their new job, which is unfavourable to the transferred workers, since the loss of seniority means a decrease in the security of employment. On the other hand, some companies offer the transferred workers preferential seniority rights in their new jobs.

Seniority rights may really impede transfers, especially in a case where technological changes affect a whole sector of development or a department. When the transfers are jeopardized because each department has its own seniority system, true keeper of the privileges of the employees, system which makes the transfer from one department to another extremely difficult, "cooperation between union and management is essential to change the structure of the seniority system and apply the necessary degree of flexibility." (5) A great number of people ask for the broadening of seniority, the setting up of a plant-wide seniority instead of a seniority at the various trades levels. (In a petroleum refinery located in the Midwest, the transferred workers and those that were laid off were chosen following a plant-wide seniority system, regardless of the profession. At the Canadian Johns-Manville Company Ltd., a plant-wide seniority system is in force. The Committee studying the case of the Manitoba Rolling Mills recommended to eliminate the special seniority

(5)

Economic Council of Canada: op. cit.



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clauses to allow employment of workers on a plant-wide seniority system basis. With the increasing technological changes, it is more and more urgent to establish the seniority system on a wider basis; automation may cancel a whole department "ex abrupto" and nothing can protect the workers concerned, in the case of a departmental seniority system. Other agreements provide for the possibility of transferring seniority rights from one department to another. In some cases, seniority rules are dropped to enable a transfer. At the Bowaters Mersey Paper Company of Liverpool (N.S.), seniority rights were given up within a union when this decision proved necessary to solve the problems of seniority rights arising from transfers between different departments.

"In the event of a permanent shut down of a department, the parties may mutually agree to waive the application of seniority to prevent an injustice being done to senior employees." (c.c. 1.a 1 company - 4500 employees). (6) Different solutions to the seniority problem have been suggested to render more flexible the system now in force. However, the exercise of seniority rights, while protecting senior employees from being laid-off, has a negative effect: it may move the incidence of the technological change unto young workers, who evidently have less difficulty in finding employment although they are as necessary to the company as senior employees.

Apart from the disagreement of losing certain rights acquired through seniority, in many instances the employee loses on his salary and benefits, when he is transferred to a job of a lower class. If the purpose of any displacement is to give the employee the kind of work that is more in line with his skills and qualifications, this aim is not always attainable. After a transfer, workers often find themselves in lower class jobs and undergo a salary reduction; and more so whenever, in their new position, they must start at the lowest step of their class. Following a modernization in a Midwest refinery, 4/5 of the workers had to take a wage cut. One Canadian Collective Agreement stipulates that the employee will be paid at the wage rate of the job he has accepted

(6)

C.C.L.A. (Abbreviation for Canadian Collective Labour Agreement)

(without any consideration of his previous salary); a third one calls for the reassessment of the worker's experience after his transfer and a consequent review of his salary. At the Manitoba Rolling Mills, it was feared that dissatisfaction would arise among the workers about the general salary reduction which took place after the technological changes.

Such was not the case, however, and the situation may be explained by the relief felt by everyone when they heard they would stay with the company. Sometimes, business concerns undertake to keep their employees either if they accept a transfer with no salary reduction (as in the case of the Transit Authority of New York City) or by paying the workers, for a certain time, compensations such as the Kaiser-Steel Union Sharing Plan.

"A transferred employee shall retain his own rate or receive the rate for his new position, whichever is the higher" (C.C. Agreement).

One way or the other, the biggest worry of the workers does not seem to be the financial implications of a transfer. The report of an investigation conducted by the U.S. Bureau of Labour Statistics quoted two cases of transfers: the first one guaranteed the shifting of seniority rights, but entailed financial disadvantages, while the second one only granted economic benefits. A larger proportion of workers have accepted a transfer implying the first category of benefits which points out to the importance given to the security of employment guaranteed by seniority practices. A transfer to other jobs within the same company is the most efficient way of adapting the worker to the technological change and it is the most largely used, in spite of all the problems involved, which we attempted to solve to a certain extent.

However, the displacement of employees may be impeded by a lack of the required qualifications for vacant jobs elsewhere in the plant. Such a handicap may be overcome to a large extent when the company offers adequate training and retraining facilities.

IV) Training and retraining programs

Whenever a more complex and more costly equipment is put into use, people with a higher education and superior qualifications are needed to ensure its proper functioning and maintenance. As a plant manager pointed out the quality of the work expected of a maintenance officer: "He's got to know something about electrical and hydraulic problems, not just mechanical". Leaving aside the training programs for newcomers on the labour market and the retraining programs for senior technicians, we shall limit ourselves to training and retraining programs for those concerned by some technological change, which will allow their readjustment to the ever increasing demands in the training field brought by such changes.

- Who has the responsibility of organizing the training programs for workers displaced by automation and of paying the costs? The Government, since the unemployed represents a social cost; the industry whose gains derived from the technological change will be accrued by the higher qualifications of its employees. Numerous companies accept a training of this kind as an adequate solution to the workers displacement problem.

"Should an employee face a substantial salary loss due to a lack of training, the company will give special consideration to his retraining in order that he may reach more or less the salary level of the position he previously held before being displaced". (C.C.A. 2 firms - 12,500 workers).

"The publisher shall establish retraining wherever possible and will consult with the union thereon. Any retraining for the purpose of qualifying employees for relocation will be on the time and at the expense of the publisher ". (C.C.A.)

"It is agreed that the employer will contribute an amount of money(\$0.50) a week for each employee to a trust fund for the purpose of establishing and maintaining an education training program." (C.C.A.)

In Canada, those programs have often been drawn up jointly by companies and governments, under the old



Technical and Vocational Training Assistance Act and will no doubt be continued under the new Adult Occupational Training Act. (7) The same thing happened with the Canadian Johns-Manville, the Domtar and the General Steel where the employees were encouraged to take advantage of the federal and provincial training programs.

In certain instances, some labour unions have organized programs for their members. Amalgamated Lithographers of America have invested millions of dollars in one training program. Generally, labour union and management cooperate in the setting up of programs under the main responsibility of management.

- What is the purpose of those programs? Modern technology requires workers with an extensive basic education, who can absorb a specialized training in a particular technical field.

"We can no longer limit job training to the requirements of a specific job. As our technology changes, the content of industrial job classifications will also change. This means that workers will have to be increasingly flexible, and vocational training will have to be grounded more firmly on the fundamentals of mathematics, physics, electronics. For it is the understanding of fundamentals that gives a worker flexibility, that makes it possible for him to change, and to take on new skills as his job changes". (A.J. Hayes - International Association of Machinists).

The training will have a double object: give a general knowledge of the functioning of the equipment and fundamentals in mathematics and science. At the Alberta Government Telephone Commission, a knowledge improvement program has been developed jointly by the labour union and the Commission to enable the workers to update their basic knowledge in electricity, electronics and communications. Canadian Johns-Manville gave an elementary mathematics course.

(7)

See later Chapter on Governmental Programs.

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- Who will benefit by those programs? All the employees concerned with the technological change:

" The Company will establish a training program for the employees who have been displaced from their employment following technical changes." (C.C.A)

" Any employee who wishes to take the training in order to occupy the job he contemplates, provided he is fitted for the post." (C.C.A.)

Or those who have a certain number of seniority years only:

" In the event that any employee with security is affected by automation, the company agrees to retrain the affected worker." (C.C.C.)

- When should those programs be put into effect? Through training programs, unless a job is available. "We have found that workers simply refuse retraining because they know that the jobs for which they might train do not exist." (John Snyder, Jr.) We have found many people who are against this position. Others think that a company should not bear the responsibility of training workers who will later on be hired by another firm. Nevertheless, Canadian Johns-Manville, in cooperation with the federal Department of Labour, the provincial government and the municipal authorities, have established two training and retraining programs for those workers who had been laid off in 1963, offering them a 12-week course on the handling of heavy mobile equipment. 50% of those who took advantage of that program have immediately found a job with construction firms.

- In what way were those programs applied? The best training appears to be the occupational training (on-the-job training). This form of program, undertaken by one firm or in one industry to fill up vacancies within the company or the same industry, had more success than those keyed to the training of individuals in view of a greater man-power mobility on a larger labour market. Moreover, if we take into consideration the numerous new technological processes, the equipment and the know-how are available only on the production spot.

Many companies have on-the-job training programs; for example: General Electric, General Mills, Alberta Government Telephone Commission and the Bowaters Mersey where a man to be trained is placed in a job for a period up to two months with no loss of salary. A company may also organize courses and hire teachers. It may require the cooperation of local school authorities (General Mills) and encourage its employees to take advantage of the main occupational training means, such as technological institutes, trade schools, apprenticeship centres, the Department of Education correspondence course services. Quite a few firms pay tuition fees for their employees (totally or partly), encourage them to follow night courses and offer them time off with financial help for their studies. On the 16 collective agreements under study, 12 have an on-the-job training clause, two grant a training outside the company and 2 others give a right to both. Imperial Oil had, from 1957 to 1965, a training program for 1200 workers, comprising in-school courses and on-the-job training given on the company's time and during working hours.

Neil Chauberlin even wrote an article in 1965 suggesting the establishment of a 32-hour week of work and 8 hours of study and the employee would have been paid for 40 hours. On the other hand, the Domtar report favors the establishment on a permanent basis of an occupational retraining program, which would offer the possibility of improving one's knowledge while occupying a permanent job. This way, whenever a major change would occur, the worker would have acquired the basic theory and the practical training required by a plant reconversion.

- What are the drawbacks of this scheme? The instances of training and retraining programs not giving the anticipated results are numerous. Some of the employees who had followed courses were unable to find a job; others have been assigned to a kind of work out of line with their training. There were numerous such cases in Canada and in U.S.A. and this is what John Snyder, Jr., calls the myth of retraining. The following experience deceived 433 employees at the closing of their plant: 170 had applied for the training program paid by the company, 58 qualified to take the course, 13 followed it and 2 only found a job in line with the



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training they had thus acquired. Many problems exist: some employees are not qualified for retraining; in certain cases, their basic education is different, some need an initiation, others a brush-up or refresher course; some of them are not motivated. However, those training programs are only beginning and, according to those concerned, they are still insufficient. And we would not lack objectiveness if we believed that with their development and the increasing governmental aid in this field, we would attain substantial results with the relocation of man-power. The reason why boiler-makers had no difficulty getting relocated when the steam-to-diesel engine change took place is that, contrary to firemen, their qualifications enabled them to find another job.

### V) Retirement before the normal retiring age or advanced retirement

In the case of those workers who are nearing the retiring age and who are too old to be retrained and whose qualifications cannot be used in some other jobs, one of the solution often adopted is retirement before age. In certain industries (specially in the American petroleum industry) the older workers who have been displaced after the adoption of other techniques before attaining the normal retiring age receive their complete retirement benefits. Mr. Martin E. Segal points out, however, that this cannot be done in any industry on account of the costs involved. It would cost an average of \$13,300 to give a man a pension of \$100 a month at the age of 65, payable the rest of his life. To be able to pay the same pension at a later age, additional contributions of 40 to 50 cents an hour would be required of the employer and of the employee. The advanced retirement has been found not to be always effective, specially if it has been offered as an alternative. The employees do not want to be retired; they prefer to work for social, psychological and financial reasons (pensions are too low). The success of an advanced retirement depends partly upon the revenue it provides, which must not be too inferior to the benefits paid for a normal retirement. The advanced retirement may be voluntary or compulsory.

To introduce an automatic equipment, the Alberta Government Telephone Commission offered a pension to laid-off workers and to those being retired, provided they fulfilled the following conditions: 60 years of age with 20 years of service; between 55 and 59 years of age with 25 years of service; less than 55 years of age with 30 years of service. From 1951 to 1965, the Imperial Oil, where the retiring age is 65, gave to 400 employees between 55 and 64 years of age an advanced retirement with "improved" pensions. This measure made possible the maintenance in their job of a number of younger employees. Under the "Pacific Maritime Association and Longshoremen's and Warehousemen's Union Mechanization and Modernization Agreement" benefits are granted.

He who voluntarily retires at the age of 62 receives \$220.00 a month until he reaches the age of 65 and from then on, \$115.00 apart from the U.S. federal social security. The worker who is compulsorily retired at 62 receives \$320.00 a month until he is 65. Those who work till they reach 65 years of age receive upon retirement a lump sum of \$7,920.00. When the CN closed its London shop in 1960, 13 employees took advantage of an advanced retirement. The amount of their pension was figured according to the number of years of service and their average salary for the last five years.

Some people suggested to delay the entry upon the labour market of young workers rather than giving an advanced retirement to elderly employees. This would allow to raise the educational level of the young while offering more jobs to workers displaced by a technological change. However, such a solution depends largely upon governmental authorities.

#### VI) Lay-offs

Some of the steps advocated above cannot be applied to all business concerns. When the integration of the manpower concerned is not feasible in other branches of an industry, it is economically unwarrantable for the very existence of the company, as well as for the future of its manpower, to recommend the keeping of a certain number of employees, if their presence in the shop is

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not justified in the new production context. Restrictive practices such as those formerly imposed by labour unions in the ports of New York and of the western coast are completely unwarranted. When lay-offs cannot be avoided, the thing to do is to minimize their unfavourable effects.

Lay-offs can be delayed. The CN decided to effect no lay-offs during the winter months, when the seasonal unemployment is greater. At the Domtar Mills in Port Neuf, delays of more than a year were granted till the transfer of all the employees was completed, by providing work which otherwise would not have been done there.

The company may also help to find employment for laid-off workers in other plants through its own services or in cooperation with the National Employment Service. (8) A petroleum refinery in the Midwest contacted 800 other employees to try and find employment for its own employees hit by a technological change.

Labour unions may also help the re-employment of their members. This is the way 200 employees laid off by one company found work with other business concerns dealing with the union to which the employees belonged.

Certain companies granted their employees time off (often paid) to allow them to find some other employment. By an agreement between the union and the company, it is possible for an employee of Domtar to request leave of absence. Such a leave is generally granted for one year, and gives the right to a worker to find employment elsewhere and, if he has been unsuccessful, he may come back to Windsor and resume the work he was doing formerly.

Companies may also grant displacement allowances, pay removal fees or offer financial compensations to their laid-off workers.

(8)

See Chapter on Governmental Aid.



## VII) Financial measures

Financial measures intended to minimize the effects of a lay-off may take the form of severance pay to soften the economic impact on employees who are unable to obtain re-employment within the firm, or supplementary unemployment benefits for those who are separated from the firm for a relatively long period of time before recall, or financial assistance to assist those who need to move to another job.

The purpose of severance pay is to provide a lump-sum cash benefit to workers who become permanently separated from their firms due to a technological change. In certain cases, writes Philip Thaft, the severance pay given by the company covers part of the social cost due to loss of employment, as well as the cost of the obsolete equipment. Such allowance should not free the company from its responsibility of finding new adequate jobs for displaced workers. It is Mr. J. Barbash's opinion that in the "Pacific coast longshore agreement", management "is explicitly liquidating its employee's interests in existing job practices through a stated amount in return of which management has flexibility and manoeuvrability in the utilization of its work-force (...)" . As early as 1920, severance pay benefits were granted under an agreement between Amalgamated Clothing Workers of America, under the direction of its president, Sidney Hillmen, and the Chicago cloth industry. In 1936, the majority of American railroad companies and the 21 railwaymen unions joined in the "Washington job protection agreement" under which severance pay benefits were granted to the employees laid off on account of technological changes. Those allowances may cover a period of 5 years depending upon the number of years in service.

In general, the allowance is based upon the years of service. At the Thetford asbestos mines, it was calculated at the rate of \$100.00 per year of service. A Midwest petroleum refinery paid a "service allowance" figured on the basic weekly pay and the duration of service. Those benefits were calculated as follows: the total number of years of service less 2, multiplied by 75% of the weekly pay reduced by 1/84 for each month after the 58th anniversary of the employee.

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Sometimes, a company will require a minimum number of years of service as an eligibility condition for a severance pay. From 1957 to 1965, Imperial Oil has granted severance pay benefits to its workers who had at least one year of service.

"An employee must have at least three years of continuous service with the company to be eligible for any severance allowance." (C.C.A.)

According to comparative table of severance pay benefits established under a certain number of Canadian collective agreements, the minimum service requirement for a severance allowance is one year in 25 companies, while 21 others grant it after 6 months service.

An allowance figured on the previous salary and on the number of years of service may be limited to a maximum sum. This maximum amount and the allowance rate vary from one company to another.

"One week of salary for each six weeks of service with a maximum of 46 weeks figured on the basis of the highest weekly salary paid to the worker." (C.C.A.)

"One week of salary for each 6 months of service with a maximum of 13 weeks."

"Severance pay at the rate of one week's wages for each six months of continuous service with the employer, with a maximum of thirty-eight weeks' wages." (C.C.A.)

According to the comparative schedule, the most widely given compensation is a week allowance for each six months of service (21 companies). This allowance may be granted as a percentage of the dismissed employee's total earnings:

"A laid-off employee entitled to severance pay will be paid 1% of his total earnings for the last full period of continuous service." (C.C.A.) - or as a lump sum.

According to the comparative schedule, 32 companies (i.e. 40% of the total surveyed) grant a two-week allowance in a lump sum. Or the allowance may increase

progressively with the years of service. At the Armour Company, it was determined as follows: for those who have between one and 10 years of service, one week's pay per year; between 11 and 20 years of service, 1 3/4 week's pay for each one of these years.

The allowance may be paid in a lump sum when the worker leaves, in two installments or in consecutive weekly payments. It may be offered as an alternative to other benefits:

- for a transfer, as the compensation paid by Armour:

"In lieu of severance allowance, the company may offer an eligible employee a job in at least the same job class for which he is qualified, in the same general locality. The employee shall have the option of either accepting such new employment or requesting his severance allowance." (C.C.A.)

- for the exercise of seniority rights:

"An employee directly affected by such a move who does not exercise his seniority rights, may at the time of his displacement waive all reemployment rights and in lieu thereof accept severance pay." (C.C.A.)

- for a dismissal advance notice:

"Two companies grant an allowance of two weeks' pay if a two weeks' notice has not been given."

Whereas in some countries, severance pay equal to a month's salary is mandatory, in Canada, it is the subject of an agreement between employer and employees forming part of many collective agreements. The severance pay comparative schedule shows the variety of agreements.

The supplementary unemployment benefits, provided out of a fund financed by employers, are intended to supplement the unemployment insurance benefits as well as to ensure a certain income after those benefits have been exhausted. In a United States company, these benefits were received by 2/3 of the workers during an average of 22 weeks. A Canadian collective agreement provides that a dismissed employee who has accumulated



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365 continuous working days and 1600 hours of work receives after a week of being laid off \$13 a week during a maximum of 26 weeks (with less than 5 years of service) or a maximum of 35 weeks (with more than 5 years of service).

Certain financial compensations are paid to employees who, without being dismissed, sustain a salary loss following a transfer to a lower class job. For example, American railway employees have been receiving in addition to their new pay the full salary difference for five years. At the Armour Company, employees under 60 years of age with 5 years of service wishing to be transferred receive a technological adjustment compensation of about \$65 a week for a maximum of 26 weeks (with less than 25 years of service) or 39 weeks (with more than 25 years of service). At Kaiser Steel, the employee receives the difference between the standard hourly rates of the job he would have been entitled to if there had been no technological change and of his present job. This amount is payable during 52 weeks or until the employee gets or refuses a job equivalent or superior to the one he had prior to the change. Generally, these compensation allowances are much less frequent than severance pay. In some companies, the employees continue to receive their former salary during an interim period of variable duration whereas in other companies they have to accept a salary reduction.

Some companies assist workers and their family following a transfer, especially between two plants located in different localities, by paying for the cost of moving the worker and his family (Alberta Government Telephone Commission; CN; General Steel Wares with a maximum of \$250 for those going to London and \$300 for those going to Montreal; Imperial Oil; Armour where costs are covered by the Automation fund), and grant various allowances to make the transfer more attractive (Alberta GTC: \$8.00 per day while travelling; \$100.00 to home owners to compensate for the necessary real estate transactions.) When an employee has to move to find a job in another company, he may take advantage of the government mobility assistance program. (9)

(9) See Chapter on Governmental Assistance.

In various companies, special funds are established to provide for payment of pensions and other benefits (severance pay, relocation costs, salary loss compensations) and also to ensure a steady weekly income. The West Coast Longshore Industry Mechanization and Modernization Fund which is, according to experts, a recognition of the increase in savings resulting from mechanization and new operational procedures, provides for an amount of \$29 million to ensure a retirement pension and a guaranteed weekly income to employees; this amount being furnished by employers over a 5½ year period. The Armour Automation Fund financed by the company's contributions "equal to one cent for each hundred weight of total tonnage shipped from slaughtering and meat packing plants" up to a maximum of \$500,000 was initially used to cover the costs of research on workmen's relocation and further to pay certain costs (Oklahoma pilot training program, pilot transfer plan and other costs under the 1961 Collective Agreement).

On the other hand, the Kaiser-Steel Union Long Sharing Plan offers in addition to employment guarantees and compensation for salary reductions an original program for sharing automation profits. As the cost of labour contributes 1/3 of the production value, employees receive 32.5% of the net profits specifically attributable to automation.

Pensions and other financial benefits are of great importance to employees affected by technological change. A transfer or a dismissal may involve the loss of accumulated rights to pension and other financial benefits, rights often exclusively attached to a specific job. In order to facilitate the reclassification of workers and prevent pension plans from becoming an obstacle to labour mobility, especially in the case of older workers who have accumulated substantial pension credits, there is a vital need to increase pension ensuring workers of an actual right to all or part of the pension earned. The portable pension which recognizes the right of the workers to retain certain credits is a realistic solution which might require agreement between different private pension funds allowing for the transfer of a worker without loss of retirement rights. More than 2/3 of private pension plans in the United States covering 60% employees with pension rights include vesting provisions. At



## Appendix V

Canadian Johns-Manville, pensions are vested after 20 years of service or at the age of 55. Some companies reimburse the employee's share to pension fund upon separation (Imperial Oil), sometimes even with compound interest (Pacific Press).

### VIII) Governmental assistance

Governmental services available to enterprises and workers to help workers affected by technological change fall into three categories: education and training, manpower mobility and employment programs and counselling services.

#### 1. Education and vocational training

Companies and workers may take advantage of governmental training and retraining programs for workers affected by technological changes.

Among the different programs which in the United States have already proved the success of such governmental efforts, let us quote the Area Development Administration and the Manpower Development and Training Act (1964), "act enabling the federal government to provide training and retraining for workers whose skills or lack of skills no longer fit the employment needs of the economy." (10) In 1965, the MDTA organized 5000 training programs (some at the plant) affecting 250,000 unemployed in 500 occupational groups. During the 1965 fiscal year, \$420 million were invested in these two programs (ARA and MDTA).

"In Canada, education is a constitutional prerogative of provincial governments. Because technical and professional training is directly related to the fulfillment of economic needs, the federal government provides a very substantial financial assistance to provincial training programs. Under several agreements

(10)

United States Congress

with the provinces, the federal government participates in the financing of numerous training programs." (11)

The Technical and Vocational Training Assistance Act under which the federal government assumes 50% of provincial training expenditures and 75% of the capital expenditures was passed in 1960. This Act was rescinded by the Adult Occupational Training Act ratified on May 8, 1967 which is a new step forward in vocational training assistance. Under this Act, the federal government assumes 100% of all expenses, except for research related to occupational training (the contributions shall not exceed 50% of the costs incurred by the province - s.10) and capital expenditures. The federal government covers more particularly the municipal or provincial expenditures "involved in training adults by means of an occupational training course operated by the province or the provincial or municipal authorities" (s.5-1) and tuition or other charges of an adult training course not operated by the provincial or municipal authorities but approved by the government of the province where the course is available (s.5-3).

Moreover - and the three following provisions are essential - "the Minister may enter into a contract with any employer operating or undertaking to operate an occupational training course for adults employed by the employer to provide for the payment by the Minister to the employer of the costs incurred by the employer" (s.6-1); however, the Minister shall not enter into such contract in respect of on-the-job training or specialized training which is only of use to that employer, unless he is satisfied that such training is necessary because of technological or economic changes affecting that employer which would otherwise result in loss of employment by the adults being trained or to be trained in the course (s.6-2). Section 6-3 authorizes the

(11)

Mr. W.R. Dymond, Assistant Deputy Minister,  
Department of Citizenship and Immigration (Ottawa)-  
September 1966.

## Appendix V

Minister to cover the costs of an employer "who has arranged for the training of adults employed by him by means of an occupational training course not operated by the employer." Section 6-4 provides that the Minister shall not enter into a contract before the employer has consulted the government of his province. The Act also provides for the payment of training allowances to persons who have been part of the labour force for at least three years without notable interruption and of additional amounts to certain employers for adults following an occupational training course who are entitled to a training allowance (s.9).

According to an official of the manpower directorate in Quebec, no agreements with the federal government have as yet been concluded following the recent adoption of this Act. However, even if a general policy has not yet been established, the Department tries to provide, in specific cases, for the training and readaptation of workers.

It is still too early to assess the effects of this Act. However, as an illustration, here are a few facts about the now obsolete Technical and Vocational Training Assistance Act. An agreement on technical and vocational training signed within the framework of this Act by the Quebec government and the federal government provided for a certain number of training programs. Among these was Program 3 for technical training, which had three objects:

- to help workers increase their proficiency;
- to help unemployed people who are trying to find work;
- to provide training for those workers who wish to adapt themselves to new jobs.

Courses were offered at the request of companies or unions.

There was also Program 4 for training in cooperation with industry. This program provided for federal participation in provincial contributions to training programs carried out by companies, at their own plants.

Mr. Dymond reports that, in Canada, 80,000 unemployed attended training programs in 1965. The following are the figures for the number of persons who attended on-the-spot training programs, financed by both the federal and the provincial governments:

1961 - 1962:	1,705
1962 - 1963:	3,770
1963 - 1964:	7,814.

The training of adults, either full-time or part time, is designed to increase basic knowledge or to provide professional readjustment. At Leaside, Ontario, three companies in cooperation with the trade union, the local school boards and the federal and provincial authorities have organized courses to raise the educational level of their employees. During a six-month period, workers stopped working at 3 p.m., and for three hours studied Mathematics, Science and English. Teachers were hired. All costs were refunded by the federal and the provincial governments.

## 2. Mobility Assistance

The manpower mobility assistance program will be revised - or has already been revised - as the Honourable Jean Marchand announced in the House of Commons on March 3, 1967. Formerly, a worker had to be out of work for four consecutive months in order to draw unemployment insurance benefits, but this requirement has been abandoned.

"Any man who is unemployed or has been notified of his permanent lay-off, will be entitled to a grant if there is little prospect of suitable employment in his home community and there is a definite job for him to go to another area." (12)

At the present time, the program covers the cost of transportation of the worker, of his family and their personal belongings, and provides a grant for re-settlement that may be as high as \$1,000. From now on, a grant of

(12)

Statement by the Minister of Manpower and Immigration



## Appendix V

\$500 will be awarded to every home-owner, and an exploration grant of between \$20 and \$40 a week, for a maximum duration of four weeks, will be awarded to enable an unemployed person to look for work in another district.

### 3. Government Employment and Counselling Services

There are in Quebec two systems of employment services: the National Employment Service, which provides employment for about one-third of the people who are looking for work in Quebec, and the Provincial Employment Service, which provides employment for about 10% of these people. The remainder find work through the action of private enterprise.

The National Employment Service, which is a free agency, collects information about the labour market and does its best to find jobs for the unemployed. In 1963-64, it was responsible for 1,187,158 placements in Canada. It also conducts interviews in industrial concerns to help reclassify displaced employees. NES officers were invited to the CN works in London to familiarize themselves with the qualifications of those workers who chose to remain in London and to inform them about possible suitable jobs. The NES was supplied with complete information when the closure was first announced. At General Steel Wares in Toronto, under the terms of an agreement concluded after discussions by the joint committee, the NES was called upon for help in placement and counselling. Workers interviewed in the factory made known their preferences and described their abilities. In addition, the NES contacted a certain number of large firms in Toronto, and some of these sent members of their own staff to conduct interviews with the workers at the General Steel factory. The NES placed 125 of the 368 registered employees. The services provided by this agency should be more fully utilized. For instance, as soon as a lay-off is foreseen in an industry, the NES should be notified.

The Manpower Consultative Service provides financial and technical assistance and general advice to management and union, when a company has to face the serious problem of displacement. The Manpower Consultative Service, implementing the Manpower Assessment Incentive Program, encourages the parties affected by a technological change to conduct surveys, at the federal



government's expense, in order to find methods of adjustment to the new situation.

The basic principles underlying the Manpower Consultative Service can be summed up as follows: adjustments require a serious preliminary study; displacement plans worked out with the employees stand a better chance of being acceptable and this made easier to implement in the interest of both workers and management, present manpower must be fully utilized, and the displacement of workers should be avoided as far as possible.

Labour-management consultation within the framework of this program deals not on the change but with its effects, with the workers' needs, with the qualifications of the existing manpower, and the adaptation of manpower to a new situation. Such consultation creates an atmosphere favourable to the objective discussion of manpower problems, free from the pressures that exist around the negotiation table.

The first organization set up by the Service was the CBC-NABET joint committee, created on February 18th, 1965, under the direction of an independent chairman, to conduct the investigations necessary for the preparation of a manpower adjustment program to meet the changes to be introduced by the CBC.

#### IX) A few case studies

Although presented separately for description purposes, the adjustment measures described below are very seldom applied singly. These measures are integrated into various general adaptation programs. Some measures are closely interrelated such as natural reduction of manpower and early retirement, natural reduction of manpower and transfer of employees to jobs left vacant after departures due to natural causes, transfers of employees and measures to adapt them to their new jobs, transfer of workers and compensations for salary reductions resulting from transfer, inter-plant transfer and mobility allowances. A brief description of a few cases already considered in the course of this essay will give us a better understanding of these adjustment measures as a whole.

Canadian Johns-Manville Company Ltd., of Asbestos:

Natural reduction of manpower has been an important factor. Some changes required the retraining of workers, and this was organized by the company. A seniority system within the plant is now operative, and makes transfers possible. Retirement allowances are payable after 20 years of service or at the age of 55.

Canadian National: closing of the London works:

As soon as the decision to close was known in 1960, transfers and early retirement permitted a reduction in personnel. Eighteen employees retired early. Transfers were offered to workers in order of seniority. Those who were moved with their jobs retained their seniority rights intact, whereas the others had to start at the bottom of the seniority list in their new places of work. Those who did not wish to transfer to Montreal were able to assert their right to displace other CN employees in the Great Lakes district. Some workers had their training in London; others were trained on the jobs in Montreal and Toronto.

Relocation allowances were granted to transferred employees. A delayed lay-off program was carried out, and dismissed employees were granted severance pay. NES officers were invited to conduct interviews and help in the reemployment of workers.

The eight-point program of the International Machine-Tool Workers Association, designed to face the problem of automation in Canada further illustrates the simultaneous application of the adjustment measures described above. This program recommended in particular advance notice of change and previous consultation (13); the right to transfer within the same firm, or within a certain number of firms, and the granting of adequate mobility allowances covering, among other things, the losses resulting from the sale of the plants; training for new jobs with full salary at no cost to the employee;

(13)

See next chapter.

retention of the salary previously earned by those employees whose classification has been lowered, and maintenance of a part of the income of dismissed employees by the grant of additional unemployment benefits or severance pay; possibility of early retirement with an adequate pension.

Judging by this essay, it appears that a number of measures should be tried before resorting to lay-off, which should be the last measure considered. However, when it is felt that lay-offs represent the only solution, firms should not only be generous with severance pay, but also hold themselves responsible for the finding of new jobs for their laid-off employees. Firms could and should call upon governmental services, especially the NES. As for the workers, they should be better informed about available governmental assistance in the matter of training and mobility programs. However, mobility should not be considered as an ideal solution of the problems resulting from technological changes. The mobility of workers, which John Snyder, Jr. regards as a myth, is impeded by social and family ties and by a fear of change which leads workers to remain in their original district. These last mentioned factors may prove to be an obstacle to inter-plant transfer when plants are located in different districts. Nevertheless, inter-plant transfer together with transfer within the plant, natural reduction of manpower and early retirement are really the most important adjustment measures designed to deal with changes. Financial compensations, such as transfer allowances and compensations for salary reductions, make transfers more effective. If necessary, a temporary reserve of workers may be formed in the expectation of new vacancies due to attrition. Difficulties arising from the seniority structure may be solved by mutual agreements between unions and management aiming at more flexibility in the system. It would also be preferable if employees would, as far as possible, renounce their right contained in the seniority clauses of the collective agreement now in force, to "bump" other workers, since such a practice may cause chain transfers and thus create dissatisfaction and friction within the firm.

Each firm should work out some way to integrate transferees into the seniority lists of their new unit. Such a procedure should take into account the conditions



peculiar to each firm, and should be acceptable to the transferees by maintaining all, or part, of their accumulated rights, and should also be acceptable to the workers already employed by that firm. The preceding examples show that it is very important for a firm to set up training programs. These should be organized on a permanent basis, and not at the last moment under the pressure of some recent change. Firms should take maximum advantage of the facilities offered by recent governmental legislation, and urge their employees to do the same. As for the government, it should provide for the expansion of the basic instruction given to young people before they make their entry on the labour market, such expansion of training being essential for possible future readaptation. Measures concerning labour organization and the number of working hours, especially the shortening of the working week, do not generally create new jobs. Vivian E. Clague notes: "... any sharp reduction in weekly hours would rise labour costs substantially and could have the effect of reducing employment rather than increasing it". Moreover, the above mentioned measures are often dealt with by collective bargaining, not as readjustment measures but as fringe benefits.

There are two measures which, although they cannot solve the transfer problem by themselves, can nevertheless create an atmosphere of understanding and are even, at times, essential to the successful readaptation of workers. These measures are advance notice of change and previous consultation.

a. Advance notice of change given to the workers concerned, the union and even the NES by the employers, in order to take advantage of the period between the decision to make a change and the time the change is made. Advance notice is essential for the implementation of a readaptation program. Thus, in the Employment Service, experience has shown that the later the advance notice is served, the less efficient is the action taken. Furthermore, the advance notice eliminates ignorance of the future, ignorance which is worse than the certainty of a future lay-off. This maintains in the plant an atmosphere favourable to the acceptance of the change. Some employers hesitate to give an advance notice for the following reasons: they fear that the competitive position

of the company may thus be threatened, that workers may leave the plant before the change comes into operation, that the company may experience a serious productivity decrease, and that the union may oppose the change. However, experience has proven the contrary to be true. In most cases where notice was given early enough and was followed by union-management consultations, an agreement acceptable to both parties was reached. Mr. Stern (14) even reports that some employers told him that after the advance notice, they recorded not a decrease but an increase in productivity, due to the fact that the workers, by increasing their productivity, believed they could persuade the management not to close the plant.

The period of advance notice varies according to the industry: three years for the introduction of electronic reservation services at Air Canada; two and a half years at Manitoba Rolling Mills, in Selkirk. At the Domtar Mill, in Windsor, management confidentially informed senior officers of the union two and a half years in advance and the workers one year in advance, when the plan was accepted by the Board of Directors. Canada Iron Foundries Ltd. notified the union six months before the modernization of its main plant in St. Thomas, Ontario; three months before the manager discussed the situation with the workers, and two months in advance, when the new classifications were established, the union was given the full details. Out of 35 analyzed collective agreements in Canada, 4 provide an advance notice of 3 to 5 days; 7, of one to six weeks; 11, that is more than 30% of the agreements analyzed, of one to six months; however, 9 provide for advance notice in vague terms, such as "in advance" and "as early as possible". In the majority of cases, the union is the first to get the notice; the workers concerned are informed later. One recalls the uneasiness that followed the action of the Canadian National directors, at Nakina in 1964, when they ignored the union and notified the workers directly.

(14)

Reported speech: Seminar on Private Measures of Adjustment to Automation and Technological Change - University of Chicago.



b. If the advance notice is followed by union management consultations in joint committees, or informally, chances of success are considerably increased. Naturally, management is traditionally reluctant to let the union in on problems dealing with production systems and organization. To share with the union information about intended changes is certainly getting away from tradition. However, it must be admitted that the underlying factor of a great number of conflicts is precisely a lack of mutual information about aims and problems. Thus, the positive results achieved by Domtar are largely due to an atmosphere of cooperation between all parties concerned. These consultations may have a formal character: i.e. the establishment of joint committees for the purpose of investigating the problems created by technological changes and finding solutions acceptable to both parties. These committees limit their action to the consideration of problems arising from technological changes, and do not deal with questions normally discussed in the course of collective bargaining. Among these consultation committees we might mention the Human Relations Committee established by the Pacific Press, with the following intention: "to review the possible effect of unemployment of company organizational changes, including those resulting from the introduction of new processes...", and also the committee established by the Eastern Canada Newsprint Group.

"It shall be the function of the committee to study the effect of technological changes and automation on the employees to make such recommendations (...) to ensure that the interest of the company and the employees are fairly protected".

Consultation committees may be permanent (Canadian Johns-Manville; Casavant Frères), or created in order to study a particular case (General Steel Wares). "Normally a committee would go into action when advised by mill management that it has been decided to introduce some technological change". (C.C.C.)

Less formal consultations may consist of meetings of management and union delegates, or management and employees (Bowater Mersey).

Advance notice and union management pre-consultations are most certainly measures of a universal character that can be adopted by all kinds of industries. Although these measures do not offer a direct solution to the problems arising from technological changes, they do create an atmosphere favourable to the cooperation of both parties. And does not the creation of such an atmosphere solve half of the problem?



EXHIBIT I

Index of persons quoted:

John Diebold: President and founder of the "Dieboldine Group", a firm of administration consultants. Author of books on automation problems.

A.J. Hayes: President of the International Machine-Tool Workers Association since 1949; Vice-President of AFL-CIO

Associate-President of the American Automation and Employment Foundation.

Director of the National Economic Research Bureau.

John Snyder, Jr.: President of US Industries Inc. Director of a number of important companies.

Associate-President of the American Automation and Employment Foundation.

Ewan Clague: Commissioner of Labour Statistics, in the U.S. Labour Department, where he supervises research on labour and employment, productivity, salaries, and industrial relations.

Martin E. Segal: President of M.E. Segal and Co. Inc. Faculty member of the School of Public Health and Medical Administration, University of Columbia.

J. Barbash: Professor of Economics.

M. Witz: U.S. Secretary of Labour.





EXHIBIT II

Index of some companies quoted:

- Alberta Government Telephone Commission:  
introduction of automatic equipment.
- Bowaters Mersey Paper Company, Liverpool, N.S.:  
1962: installation of automatic equipment.
- Casavant Frères Limitée, Saint-Hyacinthe, Quebec:  
Modernization of equipment in 1963/64.
- General Steel Wares Ltd., Toronto, Ontario:  
Reorganization of production which entailed the closing of some plants - 1964.
- Imperial Oil Limited, Toronto, Ontario:  
Changes in equipment; introduction of a more automatic equipment; reorganization of production in view of a greater centralization of operations - 1957/1965.
- Manitoba Rolling Mills, Selkirk:  
1964: Vast program of equipment modernization.



EXHIBIT IIISEVERANCE PAY COMPARATIVE SCHEDULE

	<u>No. of Companies</u>	<u>No. of Weeks Granted</u>	<u>After</u>	<u>MAXIMUM</u>
<u>ONTARIO</u>	5	1 week	6 months	38 weeks
	2	2 weeks	1 year	10 weeks
	1	1 week	6 months	30 weeks
	1	1 week	6 months	23 weeks
	1	1 week	6 months	13 weeks
	3	4 weeks	4 years	6 weeks
	6	2 weeks	1 year	4 weeks
	8	2 weeks		
<u>QUEBEC</u>	5	1 week	6 months	13 weeks
	3	2 weeks	1 year	36 weeks
	4	1 week	6 months	16 weeks
	2	2 weeks	2 years	
	5	2 weeks	3 years	
	1	2 weeks	1 year	20 weeks
<u>BRITISH COLUMBIA</u>	4	1 week	6 weeks	40 weeks
	9	2 weeks	1 year	4 weeks
	1	1 week	1 year	8 weeks
	1	1 week	1 year	20 weeks
	1	1 week	1 year	25 weeks
	4	2 weeks		
<u>ALBERTA</u>	2	2 weeks	3 years	2 weeks
	1	2 weeks	1 year	10 weeks
	1	2 weeks		
<u>SASKATCHEWAN</u>	4	2 weeks		
	3	2 weeks	3 years	2 weeks
<u>MANITOBA</u>	3	2 weeks	3 years	2 weeks



## APPENDIX VI

A table of workers made redundant by the introduction of new methods, their earnings, and seniority at the time of the changes and their present status and earnings.





EMPLOYEES AFFECTED BY THE TECHNOLOGICAL  
CHANGES IN THE UNLOADING OF GRAIN-CARRIERS

<u>Name</u>	<u>Date of Hiring</u>	<u>Old Classi- fication</u>	<u>Rate per Hour</u> *	<u>Present Classi- fication</u>	<u>Rate per Hour</u> *
Blanchette, I.	20-4-55	Power Shovel operator	\$2.61	Helper	\$2.29
Ethier, R.	20-4-55	Nozzleman	\$2.46	Helper	\$2.29
Royer, P.	20-5-55	Nozzleman	\$2.46	Helper	\$2.29
St-Laurent, J.P.	13-4-55	Nozzleman	\$2.46	Helper	\$2.29
Nadeau, A.	26-4-55	Shoveler	\$2.51	Helper	\$2.29
Lafortune, Y.	13-4-55	Power Shovel operator	\$2.61	Helper	\$2.29
Loyer, René	20-4-55	Nozzleman	\$2.46	Helper	\$2.29
Loyer, Roger	20-4-55	Nozzleman	\$2.46	Helper	\$2.29
Germain, Jean- Louis	21-4-55	Power Shovel operator	\$2.61	Helper	\$2.29
Massey, R.	20-4-55	Shoveler	\$2.51	Helper	\$2.29
Gaumont, F.	20-4-55	Shoveler	\$2.51	Helper	\$2.29
Beaulieu, L.P.	13-4-55	Shoveler	\$2.51	Helper	\$2.29
Carrier, G.	20-4-55	Shoveler	\$2.51	Helper	\$2.29
Desjardins, Marius	20-4-55	Shoveler	\$2.51	Helper	\$2.29

\* The hourly rates are those specified in the Collective Labor Agreement that expired on December 31, 1966.

# Appendix VI

<u>Name</u>	<u>Date of Hiring</u>	<u>Old Classi- fication</u>	<u>Rate per Hour</u>	<u>Present Classi- fication</u>	<u>Rate per Hour</u>
Carp, B.	14-4-55	Shoveler	\$2.51	Feed tender	\$2.44
Perron, R.	20-4-55	Shoveler	\$2.51	Helper	\$2.29
Rondeau, G.	20-4-55	Shoveler	\$2.51	Helper	\$2.29
Joly, F.	5-6-57	Shoveler	\$2.51	Helper	\$2.29
L'Heureux, R.	1-11-55	Shoveler	\$2.51	Helper	\$2.29
Dumont, C.	2-11-55	Shoveler	\$2.51	Helper	\$2.29
Bellerose, R.	8-11-55	Shoveler	\$2.51	Helper	\$2.29
Loyer, G.	16-11-55	Shoveler	\$2.51	Feed tender	\$2.44
L'Abbé, G.	18-4-56	Shoveler	\$2.51	Feed tender	\$2.44
Laflamme, R.	25-4-56	Shoveler	\$2.51	Helper	\$2.29
Landreville, J.G.	17-9-63	Shoveler	\$2.51	Conveyor man	\$2.34
Ferland, R.	9-5-57	Shoveler	\$2.51	Feed tender	\$2.44
Laflamme, M.	13-11-58	Shoveler	\$2.51	Feed tender	\$2.44
Black, A.	25-10-58	Shoveler	\$2.51	Helper	\$2.34
Landreville, G.	28-4-59	Shoveler	\$2.51	Helper	\$2.29
Massey, A.	27-4-59	Shoveler	\$2.51	Helper	\$2.29
Lavoie, E.	27-4-59	Shoveler	\$2.51	Feed tender	\$2.44
Crousset, A.	30-4-59	Shoveler	\$2.51	Helper	\$2.29

Appendix VI

<u>Name</u>	<u>Date of Hiring</u>	<u>Old Classi- fication</u>	<u>Rate per Hour</u>	<u>Present Classi- fication</u>	<u>Rate per Hour</u>
Béliveau, L.	25-8-58	Shoveler	\$2.51	Feed tender	\$2.44
Archambault, W.	20-4-60	Shoveler	\$2.51	Feed tender	\$2.44
Miron, F.	21-4-60	Shoveler	\$2.51	Helper	\$2.29
L'Abbé, F.	27-4-59	Shoveler	\$2.51	Helper	\$2.29
Chenel, J.C.	27-9-60	Shoveler	\$2.51	Conveyor man	\$2.34
Houle, R.	15-4-64	Shoveler	\$2.51	Helper	\$2.29
Leclerc, G.	23-6-59	Shoveler	\$2.51	Helper	\$2.29
Jean, Jules	17-8-60	Shoveler	\$2.51	Helper	\$2.29
L'Heureux, N.	24-9-63	Shoveler	\$2.51	Helper	\$2.29
Jean, L.	6-11-61	Shoveler	\$2.51	Helper	\$2.29
Beaulieu, M.	25-9-63	Shoveler	\$2.51	Conveyor man	\$2.34
Lavoie, B.	6-11-63	Shoveler	\$2.51	Helper	\$2.29
Desjardins, Maurice	8-11-63	Shoveler	\$2.51	Helper	\$2.29
Blanchette, L.	8-11-63	Shoveler	\$2.51	Helper	\$2.29
Loyer, P.	8-11-63	Shoveler	\$2.51	Helper	\$2.29
Gagnon, Marcel	12-11-63	Shoveler	\$2.51	Helper	\$2.29
Ethier, M.	12-11-63	Shoveler	\$2.51	Helper	\$2.29
Comtois, J.G.	12-11-63	Shoveler	\$2.51	Helper	\$2.29
Rondeau, C.	13-11-63	Shoveler	\$2.51	Helper	\$2.29

# Appendix VI

<u>Name</u>	<u>Date of Hiring</u>	<u>Old Classi- fication</u>	<u>Rate per Hour</u>	<u>Present Classi- fication</u>	<u>Rate per Hour</u>
Béliveau, G.	13-11-63	Shoveler	\$2.51	Helper	\$2.29
Gaboury, A.	15-4-64	Shoveler	\$2.51	Conveyor man	\$2.34
Lapierre, F.P.	15-4-64	Shoveler	\$2.51	Helper	\$2.29
Ratte, L.	15-4-64	Shoveler	\$2.51	Helper	\$2.29
Tétreault, L.	7-11-63	Shoveler	\$2.51	Conveyor man	\$2.34

August 15, 1967.

Note: R. Comtois and C. Chevalier are to be on this list if reinstated.



APPENDIX VII

Letter from National Harbours  
Board to Committee,  
February 1, 1967.



National Harbours Board  
Montreal Harbour

Montreal 1, P.Q., Feb.1,1967

Mr. M. Cohen, Q.C.,  
Chairman,  
c/o Mr. Stanley Hartt,  
1155 Dorchester, West,  
Montreal, P.Q.

Dear Sir,

Study Committee on labor problems in the unloading  
of grain ships  
Montreal Harbour

The present letter is in reply to yours of January 25,  
1967.

Attached you will find the two following lists:

- a) A list of grain handlers unloading ships by means of our new methods, indicating their age, seniority, classification and hourly rate of pay.
- b) A list of grain handlers who have already become redundant as a result of the introduction of our new methods or who will become redundant when these methods are applied at Elevator No. 4. This list also indicates their age, seniority, classification and hourly rate of pay.

Examination of the personal records of the employees mentioned in the second list shows that a certain number of them have already been employed in the following classifications: machine adjuster third class (hourly rate \$2.29), grain elevator helper (hourly rate \$2.29) and watchman (hourly rate \$2.13). One of them, Mr. R. Perron, has already been employed as a hangar painter (hourly rate \$2.34).

## Appendix VII

In any event, we consider the employees who have become redundant to be qualified for employment as watchman, laborer (hourly rate \$2.23), grain elevator helper and machine adjuster third class. Mr. Perron is, in addition, qualified for employment as a hangar painter.

At present, there are no jobs available in our grain elevator section. However, the introduction of our new methods of unloading at Elevator No. 4 when we resume our activities in the spring will lead to the creation of six posts of grain elevator operator which will be open to the employees who have become redundant. The positions will be given to the most senior among those qualified.

Several of the employees who have become redundant have in the past been assigned to jobs inside the elevators, as for example conveyor loader or conveyor man.

Under the terms of Article 27.02 of our collective agreement with the Union, the employees who become redundant can, in accordance with their promotion schedule, apply for those positions which will continue to exist in the new system of unloading, i.e. pipeman and nozzleman, providing they have the seniority necessary to displace the present holders of these positions and providing also that they fulfill the normal requirements of these positions.

These same employees who have become redundant can also, subject to their seniority and their ability to meet the normal qualifications of the job, apply for the following positions inside the elevators (hourly rate indicated opposite each classification):-

Grain elevator helper	\$2.29
Apprentice electrician	\$2.44
Assistant Chief Weigher	\$2.67
Senior Conveyer Loader	\$2.53
Conveyer Loader	\$2.44
Distributor	\$2.53
Electrician	\$2.79
G.E. Motor Starter	\$2.34
Watchman	\$2.13
Oiler	\$2.34

## Appendix VII

Machine Adjuster, 1st class	\$2.79
Machine Adjuster, 2nd class	\$2.53
Machine Adjuster, 3rd class	\$2.29
Grain Loader Operator	\$2.53
Car Dumper	\$2.53
Marine Leg Operator, type A	\$2.44
Marine Leg Operator, type B	\$2.53
Grain Dryer Operator	\$2.53
Tower Operator	\$2.44
Senior Weigher, automatic scales	\$2.73
Senior Weigher, manual scales	\$2.64
Weigher, automatic scales	\$2.67
Weigher, manual scales	\$2.58
Conveyer Man	\$2.34
Electrical Welder, 1st class	\$2.79
Electrical Welder, 2nd class	\$2.70

Except for the various classifications of weigher, no qualifications are required for the jobs in the above listed classifications other than the ability to perform the work after a reasonable period of training. This period varies in each classification. The weighers, however, must also be able to pass an examination in elementary arithmetic.

All the employees who have become redundant and who cannot be reclassified as above, as well as any employee displaced by such reclassification, will be absorbed under the classification of grain elevator helper.

Yours truly,

Harbour Master,

(signed)  
G. Beaudet

JMJ/jt

enclosures





NATIONAL HARBOURS BOARDMONTREAL HARBOURGrain Handlers

(new method)

<u>NAME</u>	<u>AGE</u>	<u>DATE HIRED</u>
<u>Loader Operator, rate \$2.70</u>		
R. Pigeon	37	24-3-52
L. Beaulieu	46	20-3-53
M. Gagnon	42	13-4-55
B. Boucher	44	14-4-55
R. Boucher	42	19-4-55
F. Beaulieu	41	20-4-55
R. Beaulieu	38	20-4-55
R. Lapierre	42	20-4-55
J.J.B. Tanguay	52	20-4-55
<u>Pneumatic Pipeman, rate \$2.56</u>		
A. Leblanc	54	13-4-55
S. Letourneau	52	13-4-55
E. Chaput	54	20-4-55
<u>Pneumatic Nozzleman, rate \$2.46</u>		
L. Beaulieu	60	13-4-55

Appendix VII

<u>NAME</u>	<u>AGE</u>	<u>DATE HIRED</u>
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Pneumatic Nozzleman, rate \$2.46 (continued)

J.P. St-Laurent	39	13-4-55
R. Ethier	53	20-4-55
René Loyer	41	20-4-55
Roger Loyer	35	20-4-55
P. Royer	49	20-5-55

Montreal, February 1, 1967.

NATIONAL HARBOURS BOARDMONTREAL HARBOURGrain Handlers

(now redundant)

<u>NAME</u>	<u>AGE</u>	<u>DATE HIRED</u>
<u>Assistant Foreman, rate \$2.71</u>		
I. Bouthillette	50	14-4-55
A. Archambault	42	20-4-55
A. Brodeur	48	20-4-55
A. Marquis	47	20-4-55
<u>Shovel Operator, rate \$2.61</u>		
A. Fournier	59	13-4-55
M. Gagnon	63	13-4-55
Y. Lafortune	56	13-4-55
L.P. Hébert	44	14-4-55
E. Lafortune	59	14-4-55
D. Nadeau	39	14-4-55
R. Rondeau	36	14-4-55
V. Rondeau	40	14-4-55
L. L'Abbé	41	15-4-55
I.C. Blanchette	43	20-4-55

# Appendix VII

<u>NAME</u>	<u>AGE</u>	<u>DATE HIRED</u>
<u>Shovel Operator, rate \$2.61 (continued)</u>		
R. Chicoine	40	20-4-55
R. Morin	38	20-4-55
R. Royer	39	20-4-55
G. Jean-Louis	35	21-4-55
O. Malo	61	20-8-55
<u>Grain Shoveler, rate \$2.51</u>		
H. Dubé	64	13-4-55
B. Carp	38	14-4-55
G. Carrier	37	20-4-55
H. Côté	64	20-4-55
Marius Desjardins	35	20-4-55
F. Gaumond	36	20-4-55
R. Massey	37	20-4-55
R. Perron	41	20-4-55
G. Rondeau	33	20-4-55
A. Nadeau	36	26-4-55
R. L'Heureux	32	1-11-55
C. Dumont	34	2-11-55
R. Bellerose	38	8-11-55
G. Loyer	33	16-11-55
G. L'Abbé	29	18-4-56



<u>NAME</u>	<u>AGE</u>	<u>DATE HIRED</u>
<u>Grain Shoveler, rate \$2.51 (continued)</u>		
R. Laflamme	42	25-4-56
R. Ferland	29	9-5-57
F. Joly	32	5-6-57
L. Béliveau	32	25-8-58
A. Black	33	25-10-58
M. Laflamme	37	13-11-58
F. L'Abbé	28	27-4-59
E. Lavoie	40	27-4-59
A. Massey	37	27-4-59
G. Landreville	30	28-4-59
A. Crousset	25	30-4-59
G. Leclerc	25	23-6-59
W. Archambault	45	20-4-60
F. Miron	44	21-4-60
J. Jean	32	17-8-60
J.C. Chenal	37	27-9-60
L. Jean	27	6-11-61
J.G. Landreville	34	17-9-63
N. L'Heureux	25	24-9-63
M. Beaulieu	24	25-9-63
B. Lavoie	26	6-11-63
L. Tétreault	49	7-11-63

Appendix VII

<u>NAME</u>	<u>AGE</u>	<u>DATE HIRED</u>
<u>Grain shoveler, rate \$2.51 (continued)</u>		
L. Blanchette	37	8-11-63
Maurice Desjardins	41	8-11-63
J.P. Loyer	44	8-11-63
J.G. Comtois	38	12-11-63
M. Ethier	23	12-11-63
M. Gagnier	31	12-11-63
G. Béliveau	34	13-11-63
C. Rondeau	26	13-11-63
R. Houle	41	15-4-64
F. Lapierre	45	15-4-64
<u>Pneumatic nozzleman, rate \$2.46</u>		
A. Gadoury	34	15-4-64
J.G. Ratthe	46	15-4-64
G. Salois	49	15-4-64

Montreal, February 1, 1967

NATIONAL HARBOURS BOARD

Montreal Harbour

Montreal 1, P.Q., Feb.2, 1967

Mr. M. Cohen, Q.C.,  
Chairman,  
c/o Mr. Stanley Hartt,  
1155 Dorchester, West,  
Room 2601,  
Montreal, P.Q.

Dear Sir,

Study Committee on labor problems in the unloading  
of grain ships  
Montreal Harbour

The present letter is to complete my letter of February  
1st, in reply to yours of January 25 last.

I would like first of all to point out that my replies  
to your questions should be read in the light of Article  
27 of our collective agreement with the national union  
of Montreal Harbour employees.

In particular, when I say that our employees who have be-  
come redundant can apply for positions inside the  
elevators, I mean of course positions equivalent to their  
own, as provided for in Article 27.02. In addition, with  
respect to the training to be given to displaced employees,  
a reasonable period of training should be understood as  
not exceeding the probationary period of one month laid  
down in Article 27.01.

With regard to the qualifications required, although none  
are established in the agreement this does not mean that  
an employee is not required to have the normal aptitudes,  
qualifications, and knowledge necessary for the performance  
of the desired position.

Yours truly,

The Harbour Master,  
(signed)  
G. Beaudet



## APPENDIX VIII

### FORM OF WAIVER





I, the undersigned \_\_\_\_\_  
in consideration of the procedures and benefits  
flowing from the recommendations of the Committee  
on Manpower Problems in the Unloading of Grain  
Vessels, Port of Montreal, hereby abandon and  
renounce all claims which I might have had in  
virtue of the Collective Agreement between the  
National Harbours Board and the National  
Syndicate of the Employees of the Port of  
Montreal dated August 10, 1965, and, more  
particularly, to all claims in virtue of Article  
27 of the said Collective Agreement, on condition  
that the National Harbours Board accepts the  
Report of the said Committee and grants me all  
the benefits and advantages resulting therefrom.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Number



APPENDIX IX

EXTRACT FROM CANADA LABOUR

(STANDARDS) CODE

SECTIONS 5-10





EXTRACT FROM CANADA LABOUR  
(STANDARDS) CODE

PART I

HOURS OF WORK

Standard Hours of Work

5. (1) Except as otherwise provided by or under this Part, the working hours of an employee shall not exceed eight hours in a day and forty hours in a week, and, except as provided by or under this Part, no employer shall cease or permit an employee to work longer hours than eight hours in any day or forty hours in any week.

Averaging

(2) Where the nature of the work in an industrial establishment necessitates irregular distribution of an employee's hours of work, the hours of work in a day and the hours of work in a week may be calculated, in such manner and in such circumstances as may be prescribed by the regulations, as an average for a period of two or more weeks.

General Holiday in Week

(3) In a week in which a general holiday occurs that under Part IV entitles an employee to a holiday with pay in that week, the working hours of the employee in that week shall not exceed thirty-two; but for the purposes of this subsection, in calculating the time worked by an employee in any such week, no account shall be taken of any time worked by him on the holiday or of any time during which he was at the disposal of his employer during the holiday.

Maximum Hours of Work

6. (1) An employee may be employed in excess of the standard hours of work but, subject to sections 9 and 10,

the total hours that may be worked by an employee in any week shall not exceed forty-eight hours in a week or such fewer total number of hours as may be prescribed by the regulations as maximum working hours in the industrial establishment in respect of which he is employed.

#### Averaging

(2) Subsection (2) of section 5 applies in the computation of the maximum hours of work in a week prescribed under this section.

#### Scheduling Hours of Work

7. Except as may be otherwise prescribed by the regulations, hours of work in a week shall be so scheduled and actually worked that each employee has at least one full day of rest in the week, and, wherever practicable, Sunday shall be the normal day of rest in a week.

#### Overtime Pay

8. When an employee is required or permitted to work in excess of the standard hours of work, he shall be paid for the overtime at a rate of wages not less than one and one-half times his regular rate.

#### Excess Hours Under Ministerial Permit

9. (1) On the application of an employer or an employer's organization, the Minister, having regard to the conditions of employment in any industrial establishment and the welfare of the employees, may, by a permit in writing, authorize hours to be worked by any class of employees therein in excess of the maximum hours of work prescribed by or under section 6.

#### Justifying Permit

(2) No permit may be issued under subsection (1) unless the applicant has satisfied the Minister that

there are exceptional circumstances to justify the working of additional hours.

Duration of Permit

(3) A permit under subsection (1) shall be issued for the period specified therein, which shall not be longer than the period during which it is anticipated that the exceptional circumstances that justified the permit will continue.

Additional Hours may be Specified

(4) A permit under subsection (1) may either specify the total of the number of additional hours in excess of the maximum hours prescribed by or under section 6 or may specify the additional hours that may be worked in any day and in any week during the period of the permit.

Report to Minister

(5) Where a permit has been issued under this section, the employer for whom or on whose behalf the permit was issued shall report in writing to the Minister, within fifteen days after the expiration of the period specified in the permit or within such time or times as the Minister may fix in the permit, stating the number of employees who worked in excess of the weekly hours prescribed by or under section 6 and the number of additional hours each of them worked.

Emergency Work

10. (1) The maximum hours of work in a week as prescribed by or under section 6 may be exceeded in cases of

- (a) accident to machinery, equipment, plant or persons;
- (b) urgent and essential work to be done to machinery, equipment or plant; or
- (c) other unforeseen or unpreventable circumstances;

## Appendix IX

but only to the extent necessary to prevent serious interference with the ordinary working of the industrial establishment affected.

### Reporting Additional Work

(2) Where the maximum hours of work in an industrial establishment have been exceeded under the authority of this section, the employer shall report in writing to the Minister, within fifteen days after the end of the month in which the maximum hours were exceeded, stating the nature of the circumstances in which the maximum hours were exceeded, the number of employees who worked in excess of the maximum hours, and the number of additional hours each of them worked.

APPENDIX X

MANDATE OF COMMITTEE

(Manpower Assessment Incentive Program)





MANPOWER ASSESSEMENT INCENTIVE PROGRAM

THIS AGREEMENT DATED this 19th day of July, A.D. 1966.

BETWEEN: The Minister of Citizenship and Immigration  
- hereinafter referred to as the Federal  
Minister

AND: The National Harbours Board  
- hereinafter referred to as the Board

AND: Employees' National Union of the Montreal  
Harbour (CNTU)  
- hereinafter referred to as the Union

WHEREAS vote 5 of the Department of Citizenship and Immigration estimates for 1966-67 authorizes payments, in accordance with agreements entered into, with the approval of the Governor in Council, by the Federal Minister with provinces, employers and workers, in respect of manpower mobility and assessment incentives.

AND WHEREAS the Board and the Union have jointly asked the Federal Minister through the Manpower Consultative Service to help them to assess and evaluate the manpower problems resulting from technological changes recently implemented and those forecast in the future for the unloading of grain vessels.

AND WHEREAS the Federal Minister has been authorized to enter into the present agreement under Order in Council P.C. 1966-7-1786 dated September 22nd, 1966.

AND WHEREAS the representatives of the Board and the Union have been authorized to conclude and sign the present agreement on behalf of the parties they represent.

CONSEQUENTLY, THE PRESENT AGREEMENT WITNESSES the understanding of the parties as follows:

Setting up of a research committee

1. The Board and the Union agree to set up and maintain for the life of this agreement a research committee relatively to the manpower problems which may result from the technological changes recently implemented and those forecast in the future for the unloading of grain vessels.

- 1.1 Appointment of the president

The Board and the Union shall jointly appoint an impartial person, competent in manpower problems, to act as chairman of the committee.

- 1.2 Appointment of members

The Board and the Union shall appoint 2 of their representatives as regular members of the committee.

- 1.3 In the event of one regular member's inability to act, the party that appointed him, agrees to nominate an alternate within 10 days after a written request of the chairman of the committee to that effect.

- 1.4 The names of every member and of each alternate of the committee shall be forwarded in writing to the chairman of the committee with copy to the Manpower Consultative Service.

- 1.5 Continuity of the committee's work

It is understood that the replacement of a regular member on the committee by an alternate shall not interrupt the work already undertaken.

A report of past activities shall be forwarded to the alternate who, from thereon, shall continue the work undertaken by his predecessor.

- 1.6 Governmental adviser

The representative of the Manpower Consultative Service shall be notified of all meetings and he

may attend if he so desires for the purpose of advising and helping this commission in fulfilling its duties.

2. Release of information

2.1 The Board and the Union shall provide to the committee as soon as possible and with every required detail, any pertinent available information which the committee or the president of the committee determine to be useful in the study and research work to be carried out under provisions of the present agreement.

2.2 It is understood that each party, each member of the committee, and their alternates, advisers, counsellors and researchers of the committee shall necessarily be bound to keep confidential any information brought to their knowledge as a result of their participation to the committee's activities and abstain from discussing the business of the committee with outside persons, unless specifically authorized to do so by the committee.

3. Terms of reference of the commission

The objective of the commission is:

3.1 To survey and assess the effects on manpower resulting from the recent technological changes that the National Harbours Board has implemented and those that are forecast for the future, in the unloading of grain vessels in the Port of Montreal.

3.2 To establish what measures can be taken to minimize as far as possible, if not altogether avoid the inconveniences which may affect the labour force as a result of these changes.

4. Duties of the commission

a) to adopt rules for the conduct of its meetings and for the general conduct of its activities;

## Appendix X

- b) to determine the areas and direction of studies to be carried out and in particular to study the causes which may affect directly or indirectly the workers of the grain elevators;
  - c) to conduct the approved studies required by utilizing the most up-to-date and efficient techniques, particularly in work-study or other subjects;
  - d) to review the reports of such studies carried out and to formulate recommendations based on the findings of such research;
  - e) to submit reports and recommendations to the parties and forward confidential copies to the Federal Minister through the Manpower Consultative Service.
- 4.1 The committee will meet as required on the call of the chairman and the chairman will call a special meeting without delay upon receipt of a written request to such effect from the Board or the Union.
5. Research staff (personnel)
- 5.1 Following the approval of a research project, the committee may nominate any person willing to act, whose services might be useful in carrying out said research.
- 5.2 Such an appointment will only be made on a temporary basis.
- 5.3 Any person appointed by virtue of paragraph 5.1 above will carry out his mandate under the direction and the supervision of the commission and will submit to the said committee all his reports.



The committee may, at any time, terminate the appointment of such a person by means of a written notice.

- 5.4 On conclusion of his work, this research worker submits a written report to the chairman of the commission who will forward copy of it to each member of the commission as well as the Manpower Consultative Service.

6. Finance

- 6.1 The Board shall act as Treasurer of the research committee; he shall receive or disburse the necessary funds for the program and keep an up-to-date record of income and expenses in the manner hereinafter provided. Such accounts shall be kept separate and distinct from the accounts of the Board and, in the case of each expenditure, he shall provide the relevant vouchers.
- 6.2 The Treasurer of the committee shall pay all accounts approved in relation to the Manpower Assessment Incentive Program.
- 6.3 The Treasurer of the research committee will prepare periodically a detailed statement of all financial transactions of the agreement and will forward copy of it to each member of the commission as well as the three parties to the present agreement.
- 6.4 Funds required to defray the expenses shall be supplied by the Board.
- 6.5 Expenditures with regard to which grants and incentives for the manpower assessment program may be made are limited to the expenditures listed in Appendix A hereto attached.

## Appendix X

### 6.6. Budget forecast

The budget shall forecast an amount of shareable costs up to a maximum of \$15,000.

### 6.7 Federal grant

The Federal Minister shall pay to the Board, as an incentive for manpower assessment, a sum equal to 50 per cent of the cost of the program or seven thousand five hundred dollars (\$7,500) whichever is the lesser.

6.8 The Treasurer of the Commission shall maintain adequate records of all transactions made pursuant to this Agreement, supported by proper documents and vouchers; make all or any such records, documents and vouchers available to the Minister for audit or examination upon request; and to furnish any and all information in relation thereto.

6.9 Subject to the present Agreement, the incentive premium shall be due and payable in whole thirty (30) days after the Federal Minister shall have received the final report and documents listed in section 4(e). However, the Federal Minister may, at the request of the Board, make periodic incentive payments to reimburse the Board for advances made to date of presentation of the request, subject to the following conditions:

- (a) the amount of any periodic payment shall not be in excess of 50 per cent of the advances made by the Board during the period for which payment is made;
- (b) claims for periodic payments and other incentive payments shall be presented on the forms prescribed by the Federal Minister, and accompanied by all other documents and forms required by the Federal Minister;

- (c) the Federal Minister shall not be required to make periodic payments in excess of 45 per cent of the total expenditure with regard to the program, before having received a copy of the final report and documents listed in section 4(e).

7.1 Board's contribution

The Board's contribution as an incentive to manpower studies shall be equal to 40 per cent of the cost of the program or to six thousand dollars (\$6,000), whichever is the lesser.

7.2 The Union's contribution

The Union's contribution as an incentive to manpower problems shall be equal to 10 per cent of the cost of the program or to one thousand five hundred dollars (\$1,500) whichever is the lesser.

- 8. The terms of reference of the research committee may be modified from time to time, by agreement between the Board, the Union and the Minister.

9. Duration of the agreement

The present agreement shall remain in force until the 31st of December 1966, unless previously terminated by one of the parties hereto advising the other two parties in writing of its intention to terminate the agreement; in this case, the agreement shall terminate on the thirtieth day from date of receipt of such notice.

## Appendix X

IN WITNESS WHEREOF, the parties hereto have set their hands on the day and year as above written.

In the presence of:

(signed)

(signed)

Peter D. Kilburn

J. Marchand

The Minister of Citizenship  
and Immigration

Jean Robert Ouellet

J.M. Jacques

N. Beshwaty

Jean-Paul Hétu

The National Harbours Board

Angelo Forte

Jean-Guy Carrière, Vice-President  
Employees' National Union of  
the Montreal Harbour

René Renaud, Secretary General

Paul E. Ferguson

Note: This agreement has been amended and the financial contribution of the parties modified as follows:

Federal Government	From \$7,500 to \$22,000
National Harbours Board	\$6,000 to \$18,000
Syndicate	\$1,500 to \$ 4,000

The termination date was extended from 31-12-66 to 31-4-68.











BINDING SECT. SEP 18 1968



